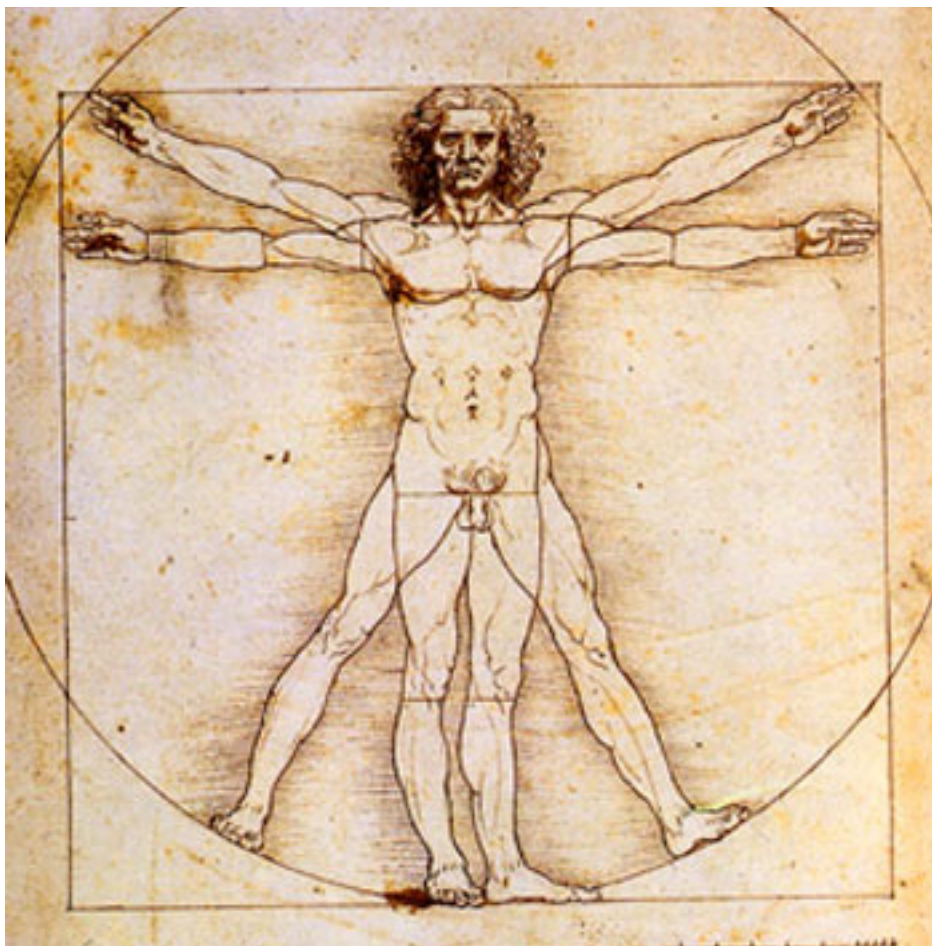
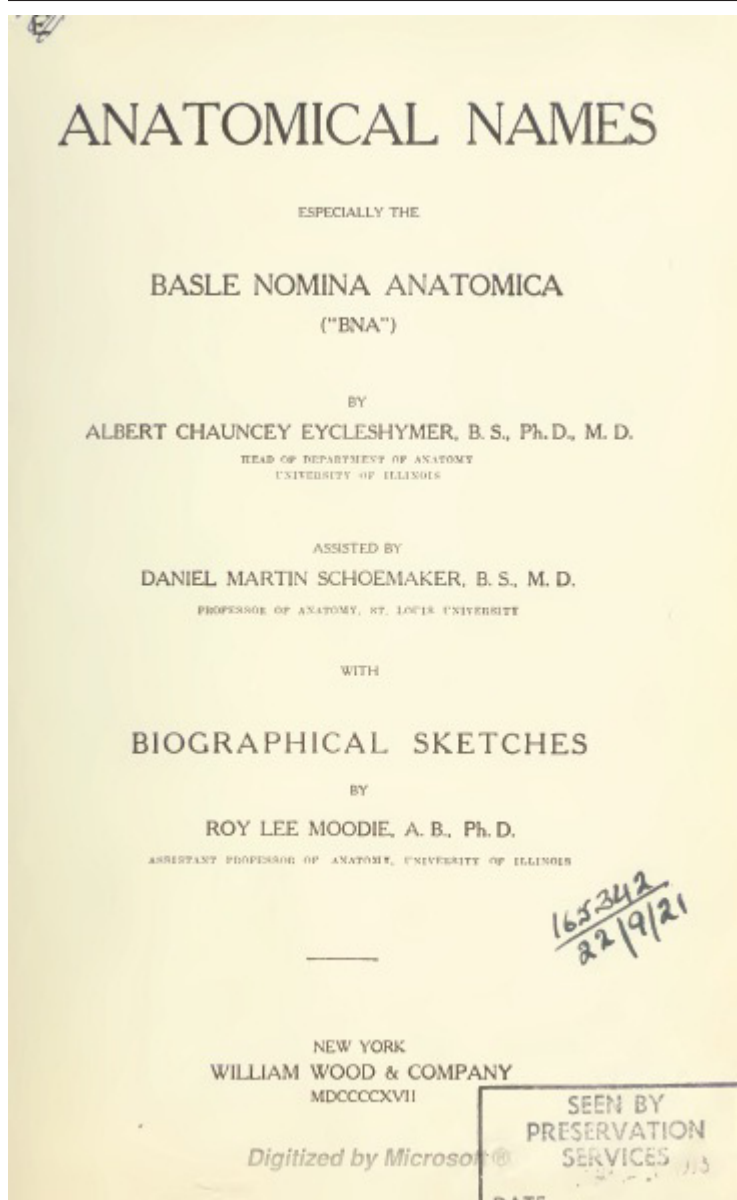


History of International Anatomical Terminology



After centuries of accumulating terms to name parts of the human body, in addition to those of other animals, a group of anatomists led by internationally renowned German-speaking morphologists, including specialists in macroscopical structures, embryologists and histologists, prepared a list of names to serve as a worldwide official standard vocabulary for all health sciences. The list that appeared in 1895 became known as the *Basle Nomina Anatomica* (BNA). Such a "standard Latin anatomical nomenclature was introduced and adopted in many countries and to a large extent dispelled the confusion existing up till that time" (WOERDEMAN, 1957). In actual fact, the revision of modern anatomical terminology had been initiated in Leipzig, Germany, in 1887 and continued in the United Kingdom in 1894.



Under the leadership of HIS, the *Basle Nomina Anatomica* was published in Latin in 1895 after its unanimous approval at the IX Congress of the Anatomische Gesellschaft in Basel, Switzerland, on April 19 1895. Unfortunately it failed to be adopted worldwide because it was used only by German-speaking, Italian, US and Latin American Anatomists (BEAU, 1955).

This was the first international attempt to offer a basis for universal agreement on the use of terms related to the human body, both for anatomy and the other health sciences. The adoption of the same terminology would eliminate national differences that were causing extreme confusion because the same structure was known by several names. Compounding the confusion, the anatomical terms sometimes included the name of one or more scientists to honour those who had first described, drawn attention to, demonstrated the meaning of, or correctly interpreted a particular structure.

In 1903 NICOLAS, from Nancy, France, was successful in founding the International Federation of Associations of Anatomists whose members would use the same language for communication purposes. The vocabulary for such a language would contain a list of Latin terms to be translated into the vernacular of each nation. Each term would correspond to just one anatomical structure. In other words, one of the Federation's original, and primary, objectives was the selection of a uniform nomenclature for

the anatomical sciences that would be universally adopted.

In 1905 in Geneva, Switzerland, during the I Federative International Congress of Anatomy, presided over by D'ETERNOD, a resolution was approved to review the BNA (1895). In so doing, the Federation was taking a major step towards achieving its first main goal of obtaining a general agreement for the adoption of a uniform and simplified anatomical terminology. In 1910 in Brussels, under the presidency of WALDEYER, the II Federative International Congress of Anatomy was held. Its principal topic of discussion was the nomenclature, and a committee to reform the terminology of embryology was created. Two decades later during the III Federative International Congress of Anatomy, held in Amsterdam, The Netherlands, and presided over by Van den BROEK, no progress occurred in terminological issues for either anatomy or embryology.

In 1933 (according to WOERDEMAN, 1957), the Anatomical Society of Great Britain and Ireland updated the BNA, presenting the *Birmingham Revision* (BR), and the Anatomische Gesellschaft did the same in 1935,

presenting the *Jenaer* or *Jenenser Nomina Anatomica* (JNA) (reported by STIEVE, 1939). Though both versions were excellent neither was universally adopted. In fact, American and Japanese anatomists had drawn up their own lists causing confusion to recur.

The IV Federative International Congress of Anatomy took place in 1936 in Milan, Italy, under the presidency of LIVINI. During this meeting, the selection of a single list of terms was attempted but no general agreement was reached. A new International Anatomical Nomenclature Committee was appointed but it was unable to prepare a list of terms that could be accepted universally since meetings could not take place because of the War (1939 to 1945).

When the V Federative International Congress of Anatomy was held in Oxford, England, in 1950 the question of an official list of anatomical terms was again discussed. The Federative Congress directed its President, LE GROS CLARK, to appoint a new international committee, to include three representatives of each country attending the Congress, and to invite each anatomical association or society to elect their own representatives. The British representative, JOHNSTON, was asked to convene the meetings of the Committee, the first of which took place in 1952 in London, after he had persuaded the Brazilian Society of Anatomy to wait for the report to be presented in Paris before proceeding with its own version. The main task of the Committee, according to the decision of the Oxford Federative International Congress, was to prepare a list of anatomical terms to be submitted to the subsequent Congress, scheduled to be held in Paris in 1955.

Thanks to a grant awarded by the Council for International Organizations of Medical Sciences (CIOMS), a meeting of the members of the Nomenclature Committee was held in London on May 26 to 30 1952, during which CORNER was elected chairman and JOHNSTON Honorary Secretary. Since a further meeting was necessary, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), at the request of its branch the CIOMS, provided the necessary funds for holding one in London in April 1954.

The Committee then prepared a final report to be submitted to the VI Federative International Congress of Anatomy, scheduled for 1955 in Paris. A subsequent meeting of the Nomenclature Committee, already split into subcommittees, was held in London from May 31 to June 5 1954. It was to review all the recommendations concerning seven sections: (1) osteology, (2) syndesmology, myology, and bursae, (3) splanchnology, (4) angiology, (5) central nervous system, (6) peripheral nervous system, (7) organs of the senses and the common integument. The first final report was primarily a list of terms for macroscopic anatomy, including ontogenetic terms and a number of terms on microscopic anatomy that were contained in the BNA. In the introduction of *Nomina Anatomica*, published in 1956 by The Williams and Wilkins Co., Baltimore, USA, it is stated that "The members of the Committee were anxious to submit the final results of their deliberations to the Congress of Anatomists to be held in Paris in the Summer of 1955".

The VI Federative International Congress of Anatomy was held, as planned, in Paris, under the presidency of COLLIN, and the *Parisiensia Nomina Anatomica* (later known as the *Nomina Anatomica*), a conservative revision of the BNA, was unanimously approved by the participants on July 24 1955.

The *Nomina Anatomica* had been revised by the International Anatomical Nomenclature Committee (IANC), appointed by the V Federative International Congress of Anatomy (Oxford, 1950), and included special features such as: (1) the names of structures discovered since the publication of the BNA list (1354 names), (2) the anatomicosurgical segments of the lungs, their bronchi and vessels, based on publications by CHEVALIER-JACKSON, HUBER, and BOYDEN, and on the work of the International Committee of Thoracic Surgeons, (3) the group of endocrine organs, and (4) no eponyms, the grand total reaching 5640 terms (4286 being unchanged BNA terms).

At the request of the committee membership, CORNER, chairman of the IANC, submitted a resolution to set up a permanent "Anatomical Nomenclature Committee to consider proposed additions and alterations to this list of terms, with authority to insert such additions and alterations as met with its approval, subject to confirmation by the next ensuing International Congress of Anatomists". The resolution was unanimously approved by the participants of the VI Federative International Congress of Anatomy (1955). At the VII Federative International Congress of Anatomy, held in 1960 in New York, USA, under the presidency of BENNETT, the Nomenclature Committee, chaired by CORNER, decided to continue updating the anatomical terminology.

It was agreed that subcommittees should be constituted to prepare *Nomina Embryologica* and *Nomina Histologica* in order to cover and provide uniformity to all biomorphological sciences. During this meeting WOERDEMAN was elected chairman of the Nomenclature Committee to succeed CORNER, who had requested to be relieved from the chairmanship. In 1961 the second edition of *Nomina Anatomica* was published, followed by a reprint (erroneously indicated as the third edition) in 1963.

On August 9 1965, during the VIII Federative International Congress of Anatomy, which took place in Wiesbaden, Germany, under the presidency of BARGMANN, the meeting of the IANC was presided over by STARCK. For the first time the meeting of the Nomenclature Committee welcomed as observers a number of veterinary anatomists, who were already discussing veterinary anatomical terminology. At the time, the hope was expressed that a close relationship could be established with international committees on veterinary anatomical, embryological and histological nomenclatures. Such initial exchange resulted in further rapprochement between the committees, which led to the inclusion in the human Anatomical Nomenclature Committee of members of the veterinary counterpart (BARONE, BAUMEL, WEBER, EVANS and HULLINGER) and vice versa (DI DIO), a link that lasted several years.

At the same meeting WOERDEMAN resigned from the chairmanship and was succeeded by BARGMANN, who was elected by unanimous vote. Alongside several recommendations and amendments, the use of Latin for all terms was approved. In addition, approval was granted for the inclusion of the names of the anatomicosurgical segments of the liver and of the kidney because the stage had been reached where the segments of both organs needed official sanction, previously only awarded to the segments of the lung. The future of the IANC and its subcommittees was discussed and it was decided by unanimous vote that the subcommittees on Embryology and Histology should retain their close association with the parent Federative Committee as all had essential work to do.

In order to obtain financial support for the activities of the Committee, primarily with regard to communication involving membership, an annual subvention from all the anatomical societies, based on US\$ 0.25 per capita or the equivalent thereof in other currencies, was unanimously approved. Such a contribution was expected to attract additional support from UNESCO, the National Institutes of Health (NIH) of the USA and other agencies or foundations. A subcommittee on Finance was proposed (DI DIO), unanimously approved and its members selected: ZWEMER (USA convener), TUCHMANN-DUPLESSIS (France) and BACHMANN (Germany). AREY (USA) was elected convener of the subcommittee on Embryology, and ELISEEV (USSR) was elected convener of the subcommittee on Histology.

In 1966 the third edition of *Nomina Anatomica* appeared and in 1968 a reprint was published, with an index, by the Excerpta Medica Foundation. The list of terms had been prepared by the Nomenclature Committee, appointed by the V Federative International Congress of Anatomy (Oxford, 1950), and approved at the VI Congress (Paris, 1955). It included revisions approved at the VII Congress (New York, 1960) and VIII Congress (Wiesbaden, 1965).

In 1968 the subcommittee on Embryology held a meeting in London, hosted by the Ciba Foundation, to finalize a provisional list of terms. In 1969 the subcommittee on Histology met in Moscow, sponsored by the Ministry of Public Health of the USSR.

During the IX Federative International Congress of Anatomy, held in Leningrad in 1970, and presided over by JDANOV, provisional lists of both *Nomina Embryologica* and *Nomina Histologica* were distributed to the participants. The meeting of the IANC was attended by representatives of the already official International Committees on Veterinary Anatomical Nomenclature and Avian Anatomical Nomenclature; the aim was to publish a list of consistent terms. The main decision was taken to publish as one volume the *Nominae Anatomica, Embryologica et Histologica*, corresponding to a *Nomenclature of Human Biomorphological Sciences*. When BARGMANN resigned from the Chairmanship of the Nomenclature Committee, MITCHELL was elected as his successor.

At the X Federative International Congress of Anatomy, held in Tokyo, Japan, in 1975, under the presidency of NAKAYAMA, the Nomen-

clature Committee met and approved the lists of *Nominae Anatomica, Embryologica et Histologica*. At this meeting AREY was elected to succeed MITCHELL. In 1977 the fourth edition of *Nomina Anatomica* with *Nomina Embryologica and Nomina Histologica* was published by Excerpta Medica, Amsterdam, Oxford.

On August 1 to 5 1979, the IV International Symposium on the Morphological Sciences in Toledo, Ohio, USA, presided over by DI DIO, sponsored a special meeting of the IANC. For the first time the Committee and all subcommittees met simultaneously on the same site. Accepting the invitation, AREY, chairman of the IANC, convened the members of this Committee and those of the subcommittees at the International Symposium. The members of the Committee and subcommittees of *Nomina Anatomica* and those of the subcommittee on Embryology met in sufficient numbers, but the few members of the subcommittee on Histology attending the Symposium "failed to produce a working group". After a special lecture on anatomical nomenclature, delivered by WARWICK, the first formal meetings of all subcommittees for *Nomina Anatomica et Embryologica* of the Nomenclature Committee were held simultaneously to discuss suggestions submitted by interested morphologists. Such reviews were made to expedite the updating of the lists of nomenclature in preparation for the forthcoming Federative International Congress of Anatomy in Mexico (1980). The success of these meetings, in which personal exchanges of views had been possible, prompted the participants to recommend that subsequent international symposia on morphological sciences include similar events on nomenclature topics and reviews.

At the X Federative International Congress of Anatomy, held in Mexico City in 1980, and presided over by ACOSTA-VIDRIO, the IANC and the Veterinary Anatomical Nomenclature Committee met separately. The revisions of all lists of terms were discussed and many recommendations were approved. At the end of the meeting WOODBURNE was elected to succeed AREY.

Following submission of the revised and updated lists by the Committee and subcommittees of the Anatomical Nomenclature and approval therefore by the XI Federative International Congress of Anatomy, the fifth edition of *Nomina Anatomica* and the second edition of *Nomina Histologica* and *Nomina Embryologica* were published in 1983 as a combined volume. This combined volume of the *Nomina* did not include an index, an important feature that most morphologists felt should be restored in future editions. *Nomina Histologica* had been approved both by the XI Federative International Congress of Anatomists and the World Associations of Veterinary Anatomists in Mexico City (1980).

At the XII Federative International Congress of Anatomy, held in London in 1985 under the presidency of HARRISON, a meeting of the members of the IANC took place. The session was presided over by WOODBURNE and the review of the lists of terms approved in the preceding meeting (Mexico, 1980) was continued. Additional suggestions for changes were considered and some were approved for inclusion in the subsequent edition of *Nomina Anatomica*. During the administrative portion of the session,

a proposal was made by WARWICK, Honorary Secretary, to change the IANC into an editorial board independent of the IFAA and, consequently, not subject to approval of the Federative Member Associations. After a long discussion, the subject was dropped (no action on the proposal was taken) and the meeting was adjourned.

As the Executive Committee of the IFAA had received suggestions from many anatomical societies to restructure the IANC, the officers of the IFAA met in London and attempted to implement a smooth transition by a democratic process of election of new members. This attempt was rejected by the Chairman and the Secretary of the IANC. In his letter, the Chairman stated that "based on historical facts, the International Federation of Associations of Anatomists had no jurisdiction over the International Anatomical Nomenclature Committee." Considering that there was no historical base for such interpretation, the Executive Committee of the IFAA decided to restructure the Nomenclature Committee and to submit a proposition on the subject to the General Assembly of the IFAA, scheduled for 1989, during the XIII Federative International Congress of Anatomy.

In December 1985 HARRISON was succeeded by DI DIO who, in consultation with the other officers of the IFAA and the presidents of the anatomical societies, continued to make efforts to solve the Nomenclature Committee issue. From 1985 to 1989 repeated attempts were made to bring the impasse to a resolution, but all approaches proved unsuccessful.

The IANC proceeded to work on the lists and published the sixth edition, which was not submitted to the Executive Committee of the IFAA or to the XIII Federative International Congress of Anatomy, held in Rio de Janeiro in 1989 and presided over by MOSCOVICI.

At the General Assembly of the IFAA, during his presidential report, DI DIO reviewed in detail the problems of the Nomenclature Committee and urged the General Assembly to provide directions for the future, based on a fully democratic preparation of an official list of anatomical terms and a democratic election of a federative committee to represent anatomists from the five continents. On August 10 1989, after a long discussion, the General Assembly unanimously approved the creation of a new Federative Committee on Anatomical Terminology (FCAT), and elected its 12 initial members:

1. Ian Whitmore (Secretary of the Anatomical Society of Great Britain and Ireland)
2. Lutz Vollrath (President of the Anatomische Gesellschaft, Germany)
3. Edward Klika (President of the Anatomical Society of Czechoslovakia)
4. Georges Grignon (Secretary General of the Association des Anatomistes, France)
5. José C. Prates (President of the Brazilian Society of Anatomy, Brazil)
6. George Martin (President of the Nomenclature Committee of the American Association of Anatomists)

7. Antoine Dhem (Delegate of the Belgian Society of Anatomy, Belgium)
8. Keith L. Moore (Delegate of the Canadian Association of Anatomists)
9. Kenjiro Yasuda (President of the Japanese Association of Anatomists, Japan)
10. Pierre Sprumont (Secretary General of the Swiss Society of Anatomy, Histology and Embryology)
11. Colin Wendell-Smith (Delegate of the Anatomical Society of Australia and New Zealand)
12. Liberato J. A. Di Dio (President of the International Federation of Associations of Anatomists, USA)

The members of the FCAT were from the following 11 countries: Australia, Belgium, Canada, Brazil, Czechoslovakia, France, Germany, Japan, Switzerland, United Kingdom and USA. After the election the president of the IFAA underlined the fact that the FCAT was an IFAA committee, and that consequently it belonged to all anatomical societies, to which it should report periodically. In addition the FCAT should democratically prepare and publish lists of terms of all biomorphological sciences. He indicated that within the budget of the IFAA, the Executive Committee thereof should finance the activities of the FCAT, and that copyrights of the publications would belong to the IFAA through the FCAT. The first officers of the FCAT were elected as follows: Chairman, Ian Whitmore; Vice-Chairman, Keith L. Moore; Secretary General, L. J. A. Di Dio; Secretaries, Georges Grignon and Lutz Vollrath.

The FCAT held meetings in the following countries: (I) France, 1990; (II) Canada, 1991; (III) England, 1992; (IV) Spain, 1993; (V) The Netherlands, 1994; (VI) Portugal, 1994; (VII) England, 1994; (VIII) Greece, 1995; (IX) Costa Rica, 1996; (X) Germany, 1996; (XI) Switzerland, 1996; (XII) USA, 1997; (XIII) Brazil, 1997.

In 1991 at the meeting held in Toronto, Canada, the following members of the FCAT were added *ad referendum* of the IFAA General Assembly: Giuseppe Balboni (Italy), Jan Drukker (The Netherlands), Domingo Ruano-Gil (Spain), Galina Satjukova (Russia) and Phillip Tobias (South Africa).

Since the first meeting, the FCAT made several contacts with the IANC aiming at the natural transition from the old approach to the approach established by the General Assembly of the IFAA. Such initiatives, however, did not result in a *modus vivendi* for harmonious collaboration.

In 1994 during the XIV Federative International Congress of Anatomy held in Lisbon, Portugal, under the presidency of ESPERANÇA-PINA, WHITMORE, Chairman of the FCAT, presented its first report on the activities of the Committee. In the discussion the report was highly praised by the delegates of several anatomical societies, and was unanimously approved. Since there was a need to increase the number of members of the FCAT, the following anatomists were elected by unanimous vote for the subsequent quinquennium (until 1999):

13. David Brynmor-Thomas, United Kingdom
14. Rolando Cruz-Gutiérrez, Costa Rica
15. Antoine Dhem, Belgium
16. Liberato J. A. Di Dio, USA
17. Jan Drukker, The Netherlands
18. Georges Grignon, France
19. Duane E. Haines, USA
20. Lev L. Kolesnikov, Russia
21. Keith L. Moore, Canada
22. José C. Prates, Brazil
23. Alessandro Riva, Italy
24. Domingo Ruano-Gil, Spain
25. Harumichi Seguchi, Japan
26. Pierre Sprumont, Switzerland
27. Phillip V. Tobias, South Africa
28. Lutz Vollrath, Germany
29. Colin Wendell-Smith, Australia
30. Ian Whitmore, United Kingdom

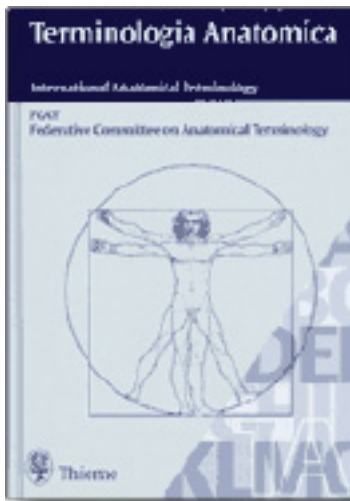
Additional members have been nominated by the FCAT *ad referendum* of the IFAA General Assembly to be held in Rome, Italy (1999). These being Raymond Gasser (USA) and Jacques Gilloteaux (USA).

The new FCAT has representatives of anatomical societies from 16 countries of the five continents (Australia, Belgium, Brazil, Canada, Costa Rica, France, Germany, Italy, Japan, Russia, Spain, South Africa, Switzerland, The Netherlands, United Kingdom, USA). The current officers of the FCAT are: Chairman, Ian Whitmore; Vice-chairman, Lutz Vollrath; Secretary General, L. J. A. Di Dio; Secretaries, Georges Grignon and Colin Wendell-Smith.

Following previous financial support by UNESCO, universities, foundations and organizing committees of congresses and symposia, the American Association of Anatomists supported the XII FCAT meeting in New Orleans, USA. In addition, the private sector has funded recent FCAT meetings. Novartis and ZLB SRK, for example, provided partial funding for the XI meeting in Fribourg, Switzerland, and the Banco Real S.A., provided full funding for the XIII meeting in São Paulo, Brazil.

In the Fribourg meeting, it was decided to submit the preliminary list of *Terminologia Anatomica* to all associations of anatomists. The results of the review and the amendments were to be received by December 1 1996. Shortly after this date, the suggestions were grouped by systems and regions to be discussed and evaluated. The vast majority was voted upon in the XII Meeting of the FCAT in New Orleans (April 5 to 9 1997).

The FCAT accepted the invitation of the Secretary General to meet on August 24 to 28 1997 in São Paulo, Brazil for the purpose of completing the preparation of the list of anatomical terms, officially launching the new *Ter-*



minologia Anatomica, deciding on its publications and dealing with other administrative matters. At the closing of the XIII Meeting of the FCAT on August 28 1997, WHITMORE made an official announcement of the completion on the *Terminologia Anatomica* indicating that the new, updated, simplified and uniform anatomical terminology was ready for publication and that it would be available shortly, Each anatomical society would then provide its members with a translation in its own language. On behalf of the IFAA, the acting President, THOMAS, complimented FCAT on the completion of the *Terminologia Anatomica*, and, on behalf of the Brazilian clinicians and surgeons, Prof. Dr. A. A. Laudanna and Prof. Dr. A. Habr-Gama respectively, expressed support for the new terminology and congratulated the IFAA on the successful work of the FCAT.

Liberato J. A. Di Dio FCAT Secretary General

This text was initially published in the TA 1998 original version, by Thieme, Stuttgart, Germany, from page 157 .