

## The history of Haematologica

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In January 1920, Adolfo Ferrata and Carlo Moreschi founded the journal *Haematologica* while sitting in the famous Gambrinus café in Naples. The Gambrinus, inaugurated in 1860, was a well-known meeting place for Italian and foreign intellectuals.

Adolfo Ferrata had graduated from the University of Parma in 1904 and had returned to Naples in 1912 after a long period in Germany. There he had started work at the Pathology Institute directed by Morgenroth, where he discovered and described for the first time the dissociation of the hemolytic complement into two fractions, which became known as the Ferrata Phenomena. He later went to work at the Medical Clinic in Berlin, directed by Pappenheim, one of the top hematologists of the early 20th century, and supporter of the monophyletic theory by which the origin of hematopoiesis is attributed to a single stem cell.

In the same year as his return to Naples, Adolfo Ferrata published the first Italian book of hematology, "Morfologia normale e patologica del sangue" ("Normal and Pathological Morphology of the Blood"). This was followed by a two-volume work entitled "Le emopatie" ("The Hemopathies"). Without a doubt, these two volumes, published in 1918 and in 1923, gave birth to the Italian school of hematology. In October 1924, Adolfo Ferrata became director of the Medical Clinic at the University of Pavia, a position that he would continue to hold until his unexpected death in March 1946.

Carlo Moreschi, who had graduated from the University of Pavia in 1901, had, as a student, attended the General Pathology Laboratory directed by the Nobel laureate Camillo Golgi. After graduating, he dedicated himself to studies in immunology and these were mainly published in German journals. In particular, his studies represented the basis of the theory of the Wasserman reaction for syphilis. In 1920, when he co-founded *Haematologica*, he was director of the Medical Clinic in Messina, Sicily. He died the following year after being infected with smallpox by a patient.

As far as Moreschi's immunological studies are concerned, it is interesting to remember what Coombs wrote in 1998 about the essential work that had been carried out in 1945 on the antiglobulin test. When the proofs had already been corrected and were ready to go into print, "Arthur Mourant, a considerable linguist, came across a paper in the German literature from 1908 by a certain Carlo Moreschi which described enhancement of red cell agglutination with an "antiserum to serum". Acknowledgement of this paper was added to the proofs as an addendum".<sup>1</sup> Also, in the 2009 edition of the treatise by Hoffman *et al.* "Hematology. Basic principles and practice", in the chapter entitled "Autoimmune hemolytic anemia" we read that "In 1908, Moreschi developed the equivalent of the antiglobulin test, or what is now referred to as the Coombs test. He developed and tested it on animal RBCs. His animal studies were ignored for almost 40 years".<sup>2</sup>

The first issue of *Haematologica*, printed by the Neapolitan publishing house N. Jovine & Co., opened with an article by

Camillo Golgi on the structure of red cells, in recognition of the Nobel laureate's achievement. The first issue also contained an article by Adolfo Ferrata entitled "Sulla patogenesi e sull'essenza della anemia di tipo pernicioso" ("On the pathogenesis and on the essence of the pernicious anemias") (Figure 1).

The Italian journal followed in the footsteps of its famous rival, the German "Folia haematologica" in which Ferrata, together with Pappenheim, had published some of their more important early works. Since its foundation, the Journal has been the official voice of the Società Italiana di Ematologia (the Italian Hematology Society). The Journal, edited in Pavia since 1924, has over the years specialized in the publication of studies of normal and pathological morphology of the blood and of the hematopoietic organs, and clinical case reports. After the death of Adolfo Ferrata, the Journal was directed by two of his students, Giovanni Di Guglielmo (from 1946 to 1960) and

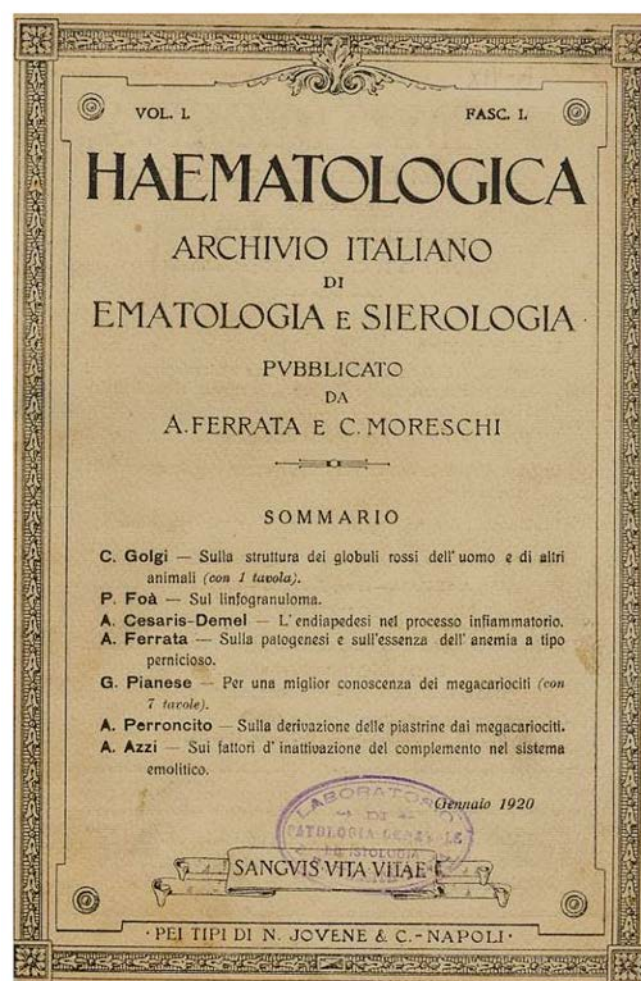


Figure 1. The cover of the first issue of *Haematologica* (January 1920).

Paolo Introzzi (from 1961 to 1973). In the April 1946 issue, which appeared shortly after Ferrata's death, Introzzi reminds readers that "Haematologica has been the glorious flagship of the Italian school of hematology..... Publication in the Journal is in itself both an honor and recognition of a paper's value".

During the post-war years, and in particular since the 1950s and during the next decade, the Journal went into progressive decline, as did many Italian journals of medicine. The same thing had also happened to other European journals of hematology, especially those from Germany (Blut, Folia Haematologica) because of the events of the war, and French journals (Le Sang, Nouvelle Revue d'Hematologie), all of which disappeared from international circulation. However, it was not just the war that had changed things, but also the speed of cultural exchange that had been established between America and Europe, to the benefit of Italian researchers who started publishing their papers in English language journals. The German and French journals went out of circulation leaving Haematologica as the oldest hematology journal in the world.

In 1973, on his election to the Presidency of the Italian Society of Hematology, Edoardo Storti, who was the youngest of Ferrata's students, decided to try to relaunch Haematologica on the national and international scene. At that time, the Journal had less than one hundred subscription holders among libraries and Italian hematologists, all linked in some way or other to the medical community in Pavia. Storti was helped in this enterprise by his colleagues Sergio Perugini as Assistant Editor and Edoardo Ascari, together with other young members of the research team that Perugini was putting together, a team in which Mario Cazzola was an important member. One of the most respected Italian publishing houses was chosen and con-

tacts were established with Italian and foreign experts in the field of hematology to set up a network of reviewers. The summary of the articles and the general index were published in English; publication of all parts of the Journal in English began the following year.

From 1978, once a sound work base had been set up, Haematologica, published in Italian and English, was put forward to the Institute for Scientific Information (ISI) for evaluation, receiving initially a relatively low Impact Factor (0.46). Over the next few years, there was an increase in the number of articles published only in English, also in proportion to the number of submissions made by foreign authors. After 1985, the Journal was published in English only and its Impact Factor continued to grow.

The expansion of the Journal in those first few years of

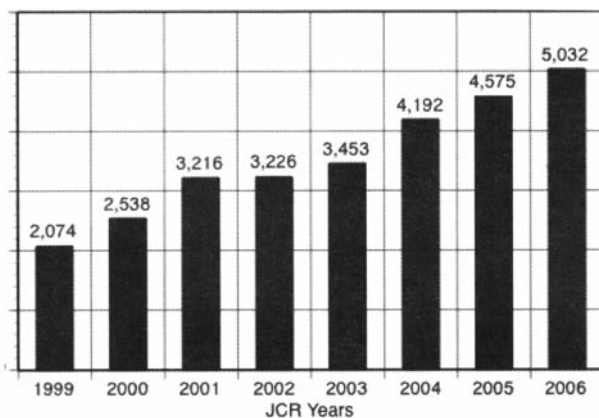


Figure 2. Haematologica Impact Factor published by the Journal Citation Reports (JCR) for the years 1999-2006.

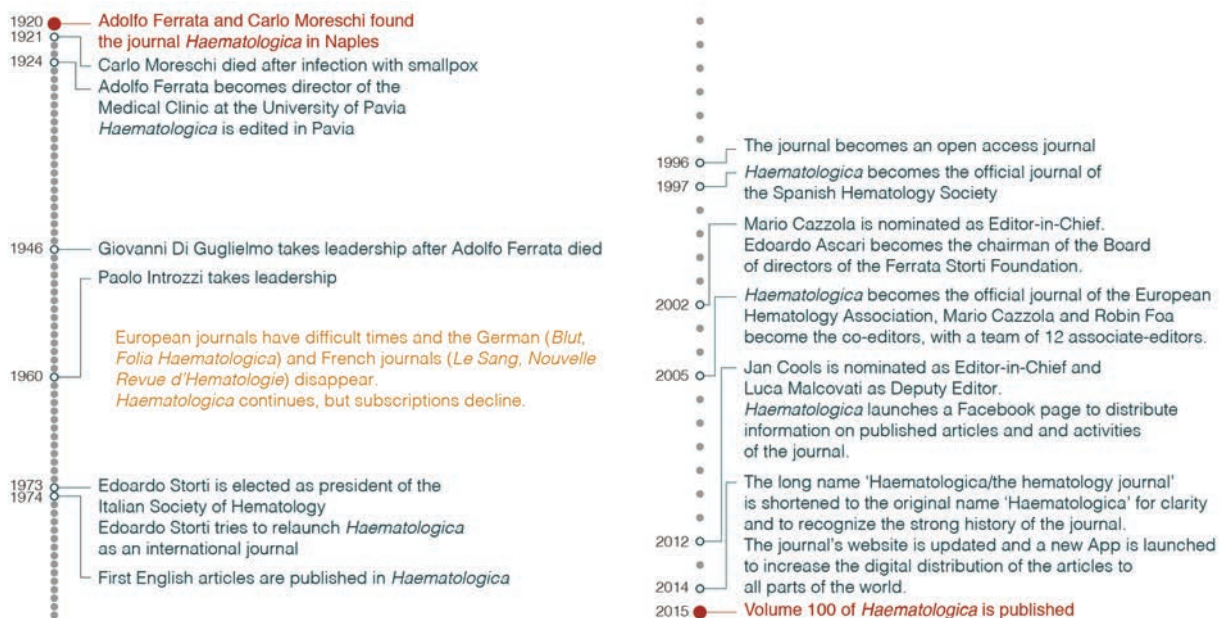


Figure 3. Timeline of important events in the history of the Journal (1920 - 2015).

the new editorial team proved problematic, also from a financial and organizational point of view. In 1983, in agreement with Prof. Ferrata's heirs, Prof. Storti set up the Fondazione Ferrata-Storti and became its first President. One of the Foundation's principal objectives was to strengthen Haematologica's profile. The Ferrata family donated the Journal to the Foundation, making it the new owner.

In 1990, Prof. Storti stood down as the Journal's Editor and Prof. Edoardo Ascari took his place while Prof. Mario Cazzola became Assistant Editor and later Co-Editor. Since 1992, the Journal also published supplements, mainly consisting of the proceedings of hematology meetings and congresses.

In addition to its link with the Italian Hematology Society, Haematologica became also the official journal of the Spanish Hematology Society in 1997, and a few years later, the Foundation moved all its editorial operations to Pavia and a bigger production office was set up.

Prof. Edoardo Ascari was made Chairman of the Board of Directors of the Fondazione Ferrata-Storti in 2002, a position he continues to hold today, and Prof. Mario Cazzola became the Journal's Editor-in-Chief. The Impact Factor continued to grow and in 2006 had reached 5.032 (Figure 2). In 2005, on the request of the European Hematology Association (EHA), Haematologica now became also the official journal of this prestigious society that brings together most of the European hematology community. The name of the Journal was changed to Haematologica/the Hematology Journal in order to incorporate the name of the Hematology Journal of the EHA. The President of the EHA, Prof. Robin Foà, was chosen to be Co-Editor to work with Prof. Mario Cazzola.

Prof. Cazzola stood down as Editor-in-Chief in 2012 in

order to take on new responsibilities on the international stage. The new Editor-in-Chief was to be nominated by the EHA while the role of Deputy Editor would be chosen by the Ferrata Storti Foundation. Since 2012, the Editor-in-Chief is Prof. Jan Cools and the Deputy Editor is Prof. Luca Malcovati.

These last eight years since the agreement with the EHA have seen a further increase in the Journal's editorial achievements. Figures for 2013 show that 1017 original articles were submitted of which 190 were accepted (18% acceptance rate), and there were 3566 subscription holders. This high level has been maintained in 2014. Since 2010, Haematologica has been within the top 10 of hematology journals, with a stable Impact Factor around 6 (most recent IF: 5.868 for 2013). Haematologica is currently ranked 5th among international hematology journals.

The Haematologica website has been managed by Bench-Press (University of Stanford, CA, USA) since 2008. It has a Facebook page since 2012 and an App since July 2014. In the first six months of 2014, the Home Page of the Journal's website has had an average of 56,163 visitors a month.

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## Red cells in post-genomic era: impact of personalized medicine in the treatment of anemias

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Over many years of research on pharmacogenetics and pharmacogenomics, we are now aware that the genetic variability among individuals is able to explain the remarkable diversity of either the therapeutic or the adverse effects observed during drug treatment. The term pharmacogenomics refers to the study of variations in the characteristics of DNA and RNA related to the drug response, while the pharmacogenetics is a subset of pharmacogenomics, and is defined as the influence of variations in DNA sequence on the drug response.<sup>1</sup> The response to drug treatment, as well as the occurrence of adverse events, is complex, involving multiple genetic and environmental factors and their interactions. Indeed, it is conditioned

either by non-genetic factors, such as environment, diet, age, sex, lifestyle, or socio-economic rank, or by genetic variations in genes codifying proteins involved in drug metabolism and delivery. Thus, personalized medicine is based on the understanding of genomic, epigenomic, environmental and pathophysiological factors as well as on drug interactions.

In the past years, genome-wide association studies (GWAS) have identified a lot of common genetic variants underlying susceptibility, most of them with only small effects, to the complex response to drug treatment. The availability of genetic and genomic data is considered an important advance towards characterizing and explaining