



## NINE DECADES AFTER THE DEATH OF THE FAMOUS SCIENTIST VICTOR BABEȘ

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The authors depict in detail the personality of the Romanian scientist Victor Babeș, who died 90 years ago. The authors gather multiple literature elements relating to this complex scientific personality, mentioning that Victor Babeș published approximately 1300 works in several languages, being recognised as a brilliant scientist. Once the biographical landmarks are presented, his complex education in the Medicine School in Vienna and later on in Paris is revealed. Recognised in the pathological anatomy and bacteriology fields, he gets appointed head professor and head of the department at the Bucharest University (1987), where he will be conducting his activity for 3 decades. His multiple scientific contributions to pathological anatomy, bacteriology, virusology and preventive medicine are overviewed, together with elements of health care organization in Romania. Victor Babeș contribution has been recognized worldwide and for his merits, in 1924, he was nominated for the Nobel Prize, a fact which never materialized due to the complex political background of that period. The personality of the scientist Victor Babeș, a member of the Romanian Academy (1893), is dominant at the beginning of the 20th century in the field of pathological anatomy and especially in the field of bacteriology.

*Key words:* Victor Babeș Romanian Scientist, Bacteriology, Pathological Anatomy, Rabies, Pellagra, Nobel Prize.

*“... my life is a big venture towards a great goal:  
truth, science development, alleviating sufferings,  
building up the Romanian nation and prosperity of humanity.”*

Victor BABEȘ, 1915<sup>1</sup>

### INTRODUCTION

1926–2016. It’s been two decades since we have been talking, writing and relating to the genius of the scientist Victor Babeș. The Romanian Academy honours him, one medicine university, one institute and several other institutions have been named after him, students and PhD candidates cite him in their presentations and papers, but the place where his body was deposited lies covered with briars. He was unjustly treated while alive and so was he after his death. The respect we show to his work will grow smaller if we do not intervene by restoring the

ruined statues representing him and by correcting the errors that appear in various writings.

Tens of thousands of pages. Victor Babeș published 1300 works in numerous languages. Magazines worldwide hosted and reviewed his studies. Library shelves gather together treatises, manuals, monographs, reports, essays, lectures and debates.

### BIBLIOGRAPHICAL LANDMARKS

Victor Babeș was born on 28 July 1854 in Vienna, son of Vincentiu and Sofia (born Goldscheider). The Babeș spouses had nine children. Vincentiu Babeș (1821–1907), “doctor in jure” in Budapest, was a significant figure in the

political and cultural life of the Banat region, a patriot, “a prominent political figure of the Romanians”<sup>2</sup>. He was one of the members of ASTRA, of the Society for the establishment of a Romanian Theatre Fund, of the Romanian Academic Society and of the Romanian Academy. He was a scholar, mindful of every political, scientific and social movement in the European space. He was rather “a man of vast knowledge, possessing understanding and discerning capabilities, having useful ideas and opinions, mediating the influence of the Academy, its spiritual and material support to the Romanians in Austria-Hungary and to their cultural needs on several occasions. He contributed to the prosperity of culture more by oral knowledge, by verb, with a well-balanced understanding, wisely uttered on the primary discussed issues, supporting initiatives that were coming to the Academy from outside or impulses stemmed from itself”, the person compiling his biography would note<sup>3</sup>.

#### FROM PHILOSOPHICAL MEDITATION TO THE STUDY OF MEDICINE

Diligent and precocious, the young Victor completes the Primary School in Vienna after two years; his father sends him over to Lugoj, to better learn the Romanian language and culture. He attends the Budapest High School for minorities, while tutoring students in Natural Sciences, Physics, Chemistry, History and Latin; he would translate from Latin for a magazine and he would write poems. Secretly he would write down in a notebook his thoughts, his poems, and he would reflect on the world's biggest questions. Beneficiary of a “Gojdu” scholarship, he begins his medical education in Budapest, and one year later he transfers to Vienna. He would start off in the medical field at a time when it had a new upsurge in Europe.

The medicine student Victor Babeş insists on anatomy, dissecting corpses and participating to autopsies, where he would collect pieces to be microscopically analysed. He enjoyed clinical internships, but he felt attracted by the laboratory and he would spend several hours at the morgue. Marked by the loss of his sister Alma, his research becomes more assiduous and he becomes an author whose works get published in magazines while still studying medicine in his fourth year. Starting 1878 he becomes a doctor of the Medicine Faculty in Vienna; later on he specialized inside important laboratories in Germany and France, where he drew the attention of many significant figures in the

medical world at the time, thanks to his qualities. Between 1877 and 1882 he entrusts various publications with over 30 studies, in which he approached various issues: congenital syphilis, cerebro-spinal disorders, heart damage, pneumonia, renal neoplasm or parasitology and bacteriology issues. Emil Craciun, the continuer of the Babeş “tradition, wrote in «Aspects of V. Babeş» works on morphopathology”: “apart from publications on various anatomical clinical issues, he initiates, without being directly taught, research in the bacteriology, a field which had been initiated by Pasteur; he does not leave out parasitology; nor mycology; he also initiates an experimental study on the correlation between the nervous system and skin diseases; he sustains a scientifically realistic position towards the pathological anatomy issues, critically debating in detail the opinions of a celebrity of the time, professor Stricker from Vienna”<sup>4,5</sup>.

It has been often mentioned that his models were the medicine illustrious representatives: Karl Langer (1819–1887), Karl von Rokitansky (1804–1878), Justus von Liebig (1803–1873), Rudolf Virchow (1821–1902), Robert Kock (1843–1905) or Louis Pasteur (1822–1895).

Wanted by prestigious European universities, Victor Babeş will receive in 1887 the invitation to be a teacher in Bucharest, thus being offered the teacher position within the Pathological Anatomy and Bacteriology Department of the Medicine Faculty, which he occupied for over three decades. One year after his appointment, Victor Babeş created the Pathology and Bacteriology Institute, the first scientific research institute in the Romanian space, the same which published, starting 1889, *The Annals of the Institute*; he founded *România medicală (The Medical Romania)* (1893) and *Archives des sciences médicales* (1895)<sup>5</sup>. He was a full member of the Romanian Academy starting 1893 and he was its vice-president twice: 1899–1900 and 1918–1919; between 1922 and 1925 he was the president of the Scientific Section of the Romanian Academy.

#### NEW SCIENTIFIC HORIZONS

Victor Babeş created scientific clearings. His name relates to research and discoveries in *microbiology and immunology, histopathology, epidemiology, forensics, hygiene and health care organization*.

In 1885, Victor Babeş together with André Victor Cornil (1837–1908), published “Les bactéries et leur rôle dans l’anatomie et l’histologie pathologiques des maladies infectieuses (Félix Alcan, Paris). The first

treatise on medical bacteriology has Cornil as a main author, who was not a bacteriologist, but his association in this case proved to be “a political tactic” because Babeş could not be seen as a Romanian in some international circles. There is a fragment of the letter Cornil sent to his friend, Nicolae Kalinderu (1835–1902), which gets cited quite often, in which he would write: “It was not Babeş who learned from me, it was me who had so much benefit from him. He was highly skilled and he proved so much erudition, and if I put my name next to his on the book we published, it was not only for the fact that I had contributed to it with my knowledge, but it was more for the fact that my name was better known”<sup>6</sup> (Photo 1).

All three published editions were out of print in less than five years. Pasteur proposed the book to be awarded, and the Science Academy in the French capital awarded it the Montyon Prize. Studying the bacteria vital competition, Babeş formulated the concept of bacteriotherapy; the bacterial antagonism was being discovered by Pasteur, but the French chemist understood it from the perspective of depletion of nutrients, hypothesis which was not leading to bacteriotherapy<sup>7</sup>. Sir Howard Florey (1898–1968), also a laureate of the Nobel Prize for the discovery of penicillin, affirmed: “The first

authors who have made research on the interaction between microorganisms (the principle of antibiotics) are Pasteur and Babeş”<sup>8</sup>. In 1886 Babeş was the first one to report diphtheria with bacillus systemic invasion of the organs, he explained in detail the disease pathogenesis and suggested a more appropriate antidiphtheritic therapy. In 1895 he prepared the antidiphtheric serum, vaccinating horses with “offset dormant toxins through blood antitoxins”; the method was adopted by many laboratories. In Paris, he published in 1888 the discovery of the etiologic agents in the cattle hemoglobinuria and sheep *Theileria hirci* – maladies with a significant economic impact, due to the losses suffered. Recognising the merits of the Romanian scientist, Raphaël Blanchard (1857–1919) proposed the inclusion of the *Babesia* genus among the protozoa, which is at present included in the *Babesiidae* family. Professor Dumitru Buiuc, in an article, mentioned: “Large current treatises attribute the babesia discovery to Theobald Smith in 1893, five years after Babeş’ discovery. The taxon etymon did not mean anything to them either. It is difficult to have Florey’s (a chemist) ethics and documentation, right in the internet age”<sup>9</sup>.

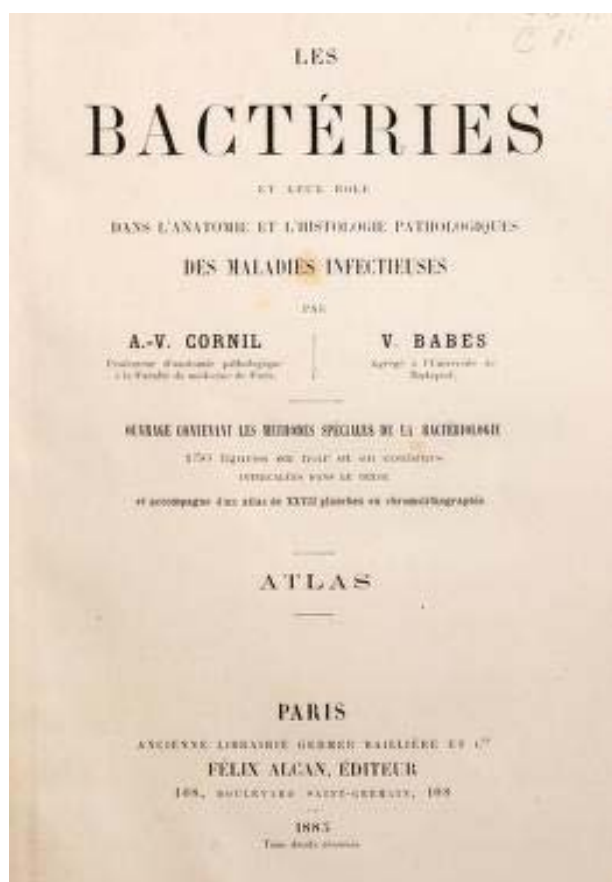


Photo 1. The first treatise on medical bacteriology.

When one mentions Victor Babeş, one frequently mentions the “Romanian method for rabies treatment”, due to which many people have been saved following animal bites. Pasteur, whose scientific merits are undeniable, but as far as the rabies vaccine is concerned gets attributed discoveries which, in reality belong to other researchers, and we will mention here Pierre Victor Galtier (1846–1908), Pasteur’s forerunner; he prepared the first vaccine, used to immunize only cattle. Luis Pasteur did not provide Babeş with his fixed rabies virus strain, to be able to make vaccinations in Budapest. In 1887, Babeş obtained a rabies vaccine which was more stable and immunogenic, compared to the French scientist. The Pasteur Institute itself used it later on. Here we cite again a wrong doing: “In Romania he was facing the frequency and the short incubation of rabies resulted from wolf’s bites, a cause of vaccination failure. He discovered that the blood serum of dogs super vaccinated against rabies, injected to common dogs, was prolonging or even preventing the experimental rabies incubation. He had discovered the serotherapy principle, published in 1889 in *Annales de l’Institut Pasteur*. Emil von Behring, only one year and a half later, published in *Deutsche Medizinische Wochenschrift*, the achieving of the diphtheria antitoxin. In March 1891, Babeş, associating the injection of serum from volunteers super vaccinated against rabies to the vaccination itself, saved 24 out of 27 persons who had been bitten by a rabid wolf in Sadagura and who had a delayed arrival in Bucharest. Behring carried out the first antidiphtheritic serotherapy in 1891, on the Christmas Eve. But the history remains unchanged in as far as recording Behring as the discoverer of serotherapy is concerned”<sup>9</sup>.

In 1889, the Romanian rabies scientist described the rabies pathognomonic cell injury in the cytoplasm of neurons in the Ammon’s horn in the hippocampus – the Babes-Negri corpuscles; Aldelchi Negri (1876–1912), a few years later, confirmed professor Babes’ discovery. Thomas E. Kienzle, in his book entitled ‘Rabies’ mentions only the Italian pathologist...<sup>10</sup>. In 1912, Babeş published “*Traité de la Rage*” (Librairie J.-B. Baillière, Paris), which was extremely well received by the international scientific world; he was awarded the Bréant Prize of the Scientific Academy in Paris, following proposals made by Emile Roux (1853–1933) and Jean-Baptiste Auguste Chauveau (1827–1917).

Researchers interested in the bibliography of topics like cholera, tuberculosis, leprosy and pellagra come also to Babeş’ significant studies, which remain references in the field. In relation to

these serious maladies he held numerous conferences and he also wrote a lot, both at home and abroad. This is how the illustrious scientist initiated one of his conferences on leprosy and pellagra: “Romania has the privilege to shelter these two particular diseases, one representing a remnant of the Middle Ages, and the other one demonstrating the misery and lack of hygienic care of the Romanian peasant”<sup>11</sup>.

The anatomo-clinical medicine world considers Babeş to be an outstanding representative, due both to his achievements, and to the students he taught and who established schools wherever they were (despite the fact his merit to have established “a school”, just like Cantacuzino did, has been disputed). Babeş investigated phagocytosis, giant cells, kidney and nervous system damage; he showed a renewed interest for tumours, oncogenesis, thymus, adrenals and testicular pathology; he detected variations in the adrenal cortical lipoids associated with Addison’s disease and tuberculosis, with severe infections thymus function in experimental conditions, such as adrenaline administration.

Epidemiology ranks him among its outstanding members. Victor Babeş successfully put off four epidemics of cholera: Paris (1884), Budapest (1886), Central Europe (1892), Bulgaria (1893). He was invited as an expert by the Bulgarian Government “to study cholera and to express his opinion on the cholera defence system in Bulgaria”, so that the most useful methods could be adopted. Babeş’ advice was: “Since cholera, which most certainly will soon cease in Bulgaria, will probably reappear during winter or the coming year in the neighbouring countries or in those having commercial relationships with Bulgaria, organizing a particular police service along the Danube would be helpful. This office would consist in several (4–5) stations placed adown the towns where ships quarantine and disinfection will be in place. This office shall have available several small police ships. Each ship going through these stations shall be stopped and examined; following which it shall be issued with a note to be presented to the neighbouring stations and containing the name of the ship and the number of passengers. This system, already accepted in Germany, shall successfully replace the current ships and commodities quarantine, inconveniences of which I have presented. I have much more trust in Bulgaria’s effective defence carried out by the execution of the recommended goods, as much as I have been convinced, in the short four day period I spent (here), by the intelligence of the medical staff, the administrative vigour and the discipline of the executive bodies”<sup>12</sup>.

Victor Babeș was often required to attend forensic examinations in various European capitals. The contemporary documents demonstrate his competence and provide the researcher with interesting information regarding the necropsies he attended, as well as the debates related to various forensic acts.

In “România medicilor” (“*Doctors’ Romania*”), the Cluj historian Constantin Bărbulescu was writing that ‘doctors are characters who do not remain silent’<sup>13,14</sup>. Victor Babeș did not remain silent either, and he spoke out about the hygiene of the peasant and the hygiene of the Romanian, in general. He was preoccupied with potable water treatment, the Romanian’s food, but also with intellectual work hygiene.

In 1894, while participating to the Eleventh International Congress of Medicine in Rome, Victor Babeș presented a report which was highly praised, fact which is proven by its translation in numerous languages. We cite a few representative chapters of this report, “the State in front of the new bacteriological research”: “II. The doctor against the State”, “IV. The position of social science towards the public hygiene requirements”, “V. The situation of modern bacteriology taking into account the State activity”<sup>15</sup>. The Romanian officials administering ministries, institutions generating health policies, will be able to find in Victor Babeș’ writings numerous ideas to be put into practice, despite the fact his texts are almost one hundred years old. Interested in health care organization, Babeș wrote on “The Ultimate Direction of the Health Service. The abilities the Health and Medical Service leader should have”, “Political Doctors and Medical Policy”, “The Fight for Public Health in Romania”, “Critical Assessment of the Current Health Organizations” (in two parts) etc<sup>16</sup>. In a memoir published in *România medicală* (The Medical Romania), Babeș expressed his opinion that “the current deplorable state of the public health system was largely due to the lack of a suitable absolute and independent organizational system, to the lack of discipline, to the influence exerted by political interests and to the lack of a sufficient and independent budget”<sup>17</sup>.

### VICTOR BABEȘ AND THE NOBEL PRIZE

Many Romanian academics recognized his scientific merits and nominated him – in 1924 – to

the Nobel Committee, for the physiology and medicine award. Gheorghe Marinescu, Constantin Daniel, George Stoicescu, Ion G. Nanu-Muscel, Mina Minovici, Nicolae I. Meșianu, Anibal Theohari, Dimitrie Gerota, Alexandru Obregia, Ștefan Nicolau, Ernest Juvara, Mihai Manicatide, Dumitru Manolescu submitted their nomination for Victor Babeș – motivation: “Work on the pathological anatomy, symptomatology, prophylaxis and treatment of pellagra”<sup>18</sup>.

The Nobel Foundation decided that the distinction was assigned in 1924 to Willem Einthoven for his discovery of the electrocardiogram mechanism<sup>19</sup>. In 1945 the Nobel Prize for the discovery of penicillin and its therapeutic action in various infectious diseases is awarded to Sir Alexander Fleming, Ernst Boris Chain and Sir Howart Walter Florey. Victor Babeș is a precursor of the anti-infective fight, as Nathan Smith in his article “History: The War against Infection”, published in the Cambridge University *BueSci* prestigious journal noted: “By 1885, Victor Babeș had shown that it was chemical substances produced by microorganisms that killed bacterial species”<sup>20,21</sup>.

### ENVIED AND ASSAULTED BY HIS FELLOW COUNTRYMEN

One would believe that the presence in the Romanian space of an individual having Babeș’ intellectual structure and international notoriety would honor his fellow countrymen and would determine them to fully support him for the benefit of science and of the country. It’s just the opposite.

Babeș refused his political involvement and he refused to play the game of various university teams and he was soon struck. Literally. There is a famous episode, where Grigore Romniceanu (1845–1915), “a politically driven plastograph”, a professor and Dean of the Faculty of Medicine in Bucharest, verbally assaulted Babeș within the Faculty Council, being only one step away from physically assaulting him, an episode which was ended by the professors who were present at the meeting.

Following a political order, the Minister of Education, Spiru Haret (1851–1912), diminished his budget, abolished his rabies station service, cut off the funding required for the publication of *Analele Institutului*, he even ordered him to stop teaching bacteriology and give up the associated department within the Institute. Haret went so far as to unjustly accuse him on various matters.

The microbiology Professor in Iasi, Dumitru Buiuc, wrote: "Politicians were setting up a group of young people returning from their studies in Paris. The spearhead was Ioan C. Athanasiu, Professor of Physiology at the Faculty of Bucharest and a Tulcea senator. In 1913, while at the Senate, he was making an evil interpellation in relation to the antidiphtheric serum Babeş had obtained. On that occasion Babeş said: «... some young people, who have just returned from abroad, have tried to initiate a foreign science movement and have sought by various means to compromise the young Romanian scientific research, which had its strongest fortress within the Institute for Bacteriology». In his defence, the Great Babeş, turned to the report issued by the Court of Auditors, which invalidated the allegations of funds appropriation, he exposed the counterfeit documents of the Health System, he submitted evidence that tampered samples, lacking counter-samples, had been secretly sent over to be examined in Copenhagen, with the purpose of demonstrating the fraudulent misuse of statistics data and to make public the appraisals of the big European Institutions with regards to the antidiphtheric serum he was obtaining. Emil Roux, the Director of the Pasteur Institute in Paris wrote to him: «I feel it is quite superfluous to add that a bacteriologist as proficient as you are is specifically indicated to prepare therapeutic serums... All those who are aware of the serotherapy development, know the part you have taken throughout this progress and are grateful for it». Paul Ehrlich, the Director of the Institute of Serum Control in Germany, pointed out: «The antidiphtheric serum you sent over possesses absolutely satisfactory qualities... You are proceeding in an extremely economic manner. The trading price of these 30.000 serum doses is several times higher than the grant you have been offered»<sup>22</sup>. Assaulted and disappointed, Babeş used to say: "I am not accusing anyone..." He was thus demonstrating his superiority over the nullity surrounding him.

He was considered to be "an impostor" for having publicly expressed himself against the irregularities in the medical higher education. He believed that the value of a person and international certification should take priority in promotion criteria. "For me, there is only one single way to recruit professors. We must be certain that the candidate is indeed a scientist. (...) it happens only with us that scientists fall down from the sky, ready to become professors", Babeş wrote in the contemporary medical publications<sup>23</sup>.

## WAS BABEŞ A COLLABORATIONIST?

There are articles accusing Babeş for not having joined those who were withdrawing in Iasi, in 1916. The scientist had prepared the Bacteriology Institute for its evacuation to Moldova, but he had been ordered by three distinct government sources to remain in Bucharest. The occupants could kill him: an ex citizen of Austria-Hungary, his mother was Austrian, his wife was Hungarian, he was the initiator of the Romanian doctors boycott during an International Congress in Budapest, in 1909. He even got arrested twice... But his help was needed for the anti-epidemic protection of the occupation armies. "Who took care of the Romanian army, decimated by the typhus in 1917? The answer was buried together with Ioan C. Bratianu", the above mentioned Iasi academic would write<sup>24</sup>.

Recently, during a symposium, the Bucharest historian Dan Falcan, custodian of the "Victor Babeş" Museum, demonstrated, based on documents, that Victor Babeş "so called collaborationism and his germanophilia remained only a legend"<sup>25</sup>.

Upon his return to Bucharest, Ioan Athanasiu (1868–1926) will accuse Victor Babeş of treason! The same year, he was being welcomed with pomp in Cluj and invited to become Dean of the Medicine Faculty, position which he declines, although he did get involved in supporting the Transylvanian University<sup>26</sup>.

For seven years, between 1919 and 1926, the year he died, Babeş was subjected to a continuous pressure. The one that had once brought on financial benefits and fame onto Romania was continuously being threatened with his retirement.

Dr. Nicolae Kretzulescu (1812–1900) would this way address Babeş in the auditorium of the most important institution in Romania: "You managed to pass your brilliance over to a whole country, so that its scientific research may glow in the world equally powerful to the one falling on us from countries with a vast tradition"<sup>27</sup>.

## CONCLUSIONS

Victor Babeş (1854–1926), exponential personality of the Romanian and universal science, is celebrated this year, nine decades after his passing. The Romanian scientist, moulded inside important European medical centres, declined the offers made by various universities and accepted to be a professor in Romania, in Bucharest. His notoriety brought a benefit

to the country, but, at the same time, his non-involvement in politics, his refusal to compromise also brought difficulties on him. The more pages and discoveries he would sign, the more detractors he would have<sup>28</sup>. He remains an important pillar of the universal medicine, which has him recorded among its pioneers, rigorous scholars and social activists. The paper was meant as a praise to the Romanian Scientist and it highlights both his human and professional development, and his scientific contributions.

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