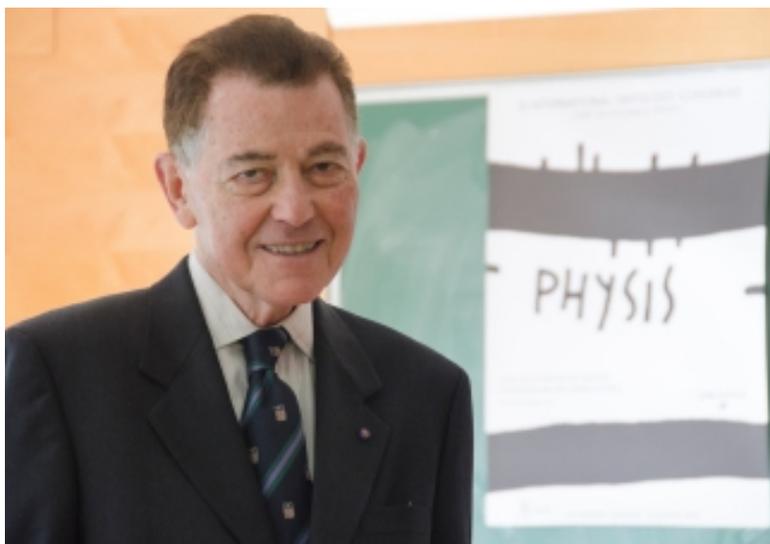


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Francisco Jose Ayala, Specialist in Evolution and Philosophy of Biology



"Spain pays the education of scientists, but when they start to produce results, they benefit others"

As part of the 11th International Conference on Ontology, Francisco José Ayala (University of California, Irvine) gave a talk on human biology and culture at the Faculty of Philosophy and Arts on 6 October. Ayala has carried out his entire academic career in the United States and is now one of the most prestigious scientists in the world.

Francisco José Ayala (Madrid, 1934) is a specialist in evolutionary biology and is considered one of the most prominent Spanish scientists of today. After studying in Salamanca, he launched his academic career in the United States, where he has developed it fully. He received his PhD from Columbia University and later joined the Rockefeller University and the University of California. His research has focused on the molecular clock of evolution, i.e., the study of protein sequences to reconstruct evolutionary history. His group has also studied the origin and evolution of introns, pseudogenes and ectopic expression. Ayala also has studied the origin of malaria and other parasitic diseases such as leishmaniasis, Chagas disease and sleeping

sickness.

Another outstanding speciality of Ayala, who was ordained but soon after left the priesthood, is the philosophy of biology, bioethics, the relationship between science and religion and the teaching of evolutionary theory in schools.

Ayala has written more than forty monographs and a thousand scientific papers. He has been member and/or chairman of some of the major academies and scientific associations, such as the Academy of Sciences of the United States. He was advisor to President Bill Clinton and, among other awards, received the prestigious Templeton Prize (2010) and has been made an honorary doctor in twenty universities in Greece, Italy, Spain, Argentina, Czech Republic, USA, Poland and Russia.

Francisco José Ayala, renowned specialist in the study of the molecular clock of evolution and philosophy of biology, gave the lecture “What is the Human Animal? Biology and Culture” on 6 October at the Faculty of Philosophy and Arts, as part of the 11th International Conference on Ontology, coordinated by Víctor Gómez Pin, professor of the UAB Department of Philosophy.

The event was presented by Teresa Cabré, Dean of the Faculty, who was pleased to have Ayala’s conference and emphasised that “students of the arts should listen to the reflections of a scientist” because “compartmentalising disciplines is not good”. Then the professor of philosophy Victoria Camps glossed the leading figure of Ayala, which she described as “one of the most internationally renowned scientists today”. She praised his work as a populariser of evolutionary biology and his contribution to the reflection on the relationship between science and religion.

In his lecture, Ayala spoke about human evolution, especially about the difference between biological evolution and cultural evolution and the relationship of both to the development of ethics. The biologist said that the ethical capacity is the result of biological evolution, while ethical codes are the result of cultural evolution.

What has been the contribution of genetics to the study of knowledge about evolution?

Mainly it has contributed to understanding the biological basis of evolution. Darwin knew and developed a theory of heredity, but it wouldn’t have worked to explain evolution. He said in several works that genetics would be necessary to prove the theory. And it’s interesting that in those days, Mendel, who recognized the contribution of Darwin and read at least two editions of *The Origin of Species*, was doing his experiments and published them in 1864 and 1865. *The Origin of Species* was published in 1859 and Darwin continued to publish many other books; but nobody knew the results of Mendel. Another interesting thing we know is that Mendel went to London in hopes of meeting Darwin but they never managed to coincide.

How far can we go back to the study of the molecular clock of evolution?

Genes have so much information on the sequence of nucleotides that, in principle, we can get to the origin of life, at least to the point where there were bodies. Surely, life began tentatively, in very different ways.

In the field of philosophy, do you believe advances in biological research revolutionise our idea of the human species?

They should revolutionise it, but we have not fully incorporated them. Many considerations take

us, for example, to treat medicine in different ways. But the tendency is to start taking evolution more and more into account.

You explained in your lecture that biological evolution is much slower than cultural evolution. Is this the big difference between the two?

It is one of the most important consequences, but the difference is that biological mutations are snapshots, unpredictable and not necessarily beneficial. In fact, most of them are not beneficial. And in cultural evolution, although some of the human inventions are not very beneficial, in general, we invent what benefits us.

In another interview you said that “anti-evolutionism is in the street but not in the scientific world”.

It does not affect the scientific world at all. It is a pity that it is in the street because, if the general public understood evolution, it would help them live life more fully and improve interaction between humans.

The presence of creationism in America is as strong as it seems here?

It has a strong background presence. Creationism exists because of ignorance: ignorance about the Bible, religion and science. In the United States, as here, they are relatively ignorant regarding these things. And there is much literal interpretation of the Bible. For example, the Bible says that God created us in six days but also says things which totally contradict this idea. But they don't worry about that because they don't think about it. There are very few creationists who are, shall we say, intellectual masterminds able to write intelligent articles.

Regarding your career, why did you decide to develop your scientific career in the United States?

In 1961, when I began my PhD studies at Columbia University, science in Spain was very bad in terms of scientific environment and budget. Two geneticists I knew recommended I go to the United States and they put me in touch with Theodosius Dobzhansky. I finished my PhD in three years and I was offered a “postdoc” position, not a common thing then, in the Rockefeller University in New York. Some years later, I became a professor without having to take any official exams or a single application to encourage me to stay there. This is relatively common in the United States: universities take the initiative to hire an individual, and they fight with others to get him.

How do you see the situation of scientific research in Spain today?

It has improved tremendously. It began to improve significantly in the eighties and now in Spain there are very distinguished scientists in all areas. But the scale is not the same as in the United States, even in relative terms of population. One reason is investment. Spain invests slightly less now than a few years ago in science and technology, about 1% of GDP; the United States invests 3% and has a much larger economy. And science provides invention, discoveries, educates the public... And that translates into economic benefits. Spain is producing very good scientists, but unfortunately for Spain and luckily for us, many of them migrate because they do not find work here: they finish their doctorate degrees abroad and want to return, but they don't find work, so they are hired there. Spain pays for the education of scientists who, when they start to produce results, end up benefiting us.

More information: [11th International Conference on Ontology.](https://www.uab.cat/web/news-detail/francisco-jose-ayala-specialist-in-evolution-and-philosophy-of-biology-1345680342044.html?articleId=134567690...)

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