

IAP STATEMENT ON THE TEACHING OF EVOLUTION

We, the undersigned Academies of Sciences, have learned that in various parts of the world, within science courses taught in certain public systems of education, scientific evidence, data, and testable theories about the origins and evolution of life on Earth are being concealed, denied, or confused with theories not testable by science. We urge decision makers, teachers, and parents to educate all children about the methods and discoveries of science and to foster an understanding of the science of nature. Knowledge of the natural world in which they live empowers people to meet human needs and protect the planet.

We agree that the following *evidence-based* facts about the origins and evolution of the Earth and of life on this planet have been established by numerous observations and independently derived experimental results from a multitude of scientific disciplines. Even if there are still many open questions about the precise details of evolutionary change, scientific evidence has never contradicted these results:

1. In a universe that has evolved towards its present configuration for some 11 to 15 billion years, our Earth formed approximately 4.5 billion years ago.
2. Since its formation, the Earth – its geology and its environments – has changed under the effect of numerous physical and chemical forces and continues to do so.
3. Life appeared on Earth at least 2.5 billion years ago. The evolution, soon after, of photosynthetic organisms enabled, from at least 2 billion years ago, the slow transformation of the atmosphere to one containing substantial quantities of oxygen. In addition to the release of the oxygen that we breathe, the process of photosynthesis is the ultimate source of fixed energy and food upon which human life on the planet depends.
4. Since its first appearance on Earth, life has taken many forms, all of which continue to evolve, in ways which palaeontology and the modern biological and biochemical sciences are describing and independently confirming with increasing precision. Commonalities in the structure of the genetic code of all organisms living today, including humans, clearly indicate their common primordial origin.

We also subscribe to the following statement regarding the nature of science in relation to the teaching of evolution and, more generally, of any field of scientific knowledge :

Scientific knowledge derives from a mode of inquiry into the nature of the universe that has been successful and of great consequence. Science focuses on (i) observing the natural world and (ii) formulating *testable* and *refutable* hypotheses to derive deeper explanations for observable phenomena. When evidence is sufficiently compelling, scientific theories are developed that account for and explain that evidence, and predict the likely structure or process of still unobserved phenomena.

Human understanding of value and purpose are outside of natural science's scope. However, a number of components – scientific, social, philosophical, religious, cultural and political –

contribute to it. These different fields owe each other mutual consideration, while being fully aware of their own areas of action and their limitations.

While acknowledging current limitations, science is open ended, and subject to correction and expansion as new theoretical and empirical understanding emerges.



1. Albanian Academy of Sciences
2. National Academy of Exact, Physical and Natural Sciences, Argentina
3. Australian Academy of Science
4. Austrian Academy of Sciences
5. Bangladesh Academy of Sciences
6. The Royal Academies for Science and the Arts of Belgium
7. Academy of Sciences and Arts of Bosnia and Herzegovina
8. Brazilian Academy of Sciences
9. Bulgarian Academy of Sciences
10. RSC: The Academies of Arts, Humanities and Sciences of Canada
11. Academia Chilena de Ciencias
12. Chinese Academy of Sciences
13. Academia Sinica, China, Taiwan
14. Colombian Academy of Exact, Physical and Natural Sciences
15. Croatian Academy of Arts and Sciences
16. Cuban Academy of Sciences
17. Academy of Sciences of the Czech Republic
18. Royal Danish Academy of Sciences and Letters
19. Academy of Scientific Research and Technology, Egypt
20. Académie des Sciences, France
21. Union of German Academies of Sciences and Humanities
22. The Academy of Athens, Greece
23. Hungarian Academy of Sciences
24. Indian National Science Academy
25. Indonesian Academy of Sciences
26. Academy of Sciences of the Islamic Republic of Iran
27. Royal Irish Academy
28. Israel Academy of Sciences and Humanities
29. Accademia Nazionale dei Lincei, Italy
30. Science Council of Japan
31. Kenya National Academy of Sciences
32. National Academy of Sciences of the Kyrgyz Republic
33. Latvian Academy of Sciences
34. Lithuanian Academy of Sciences
35. Macedonian Academy of Sciences and Arts
36. Academia Mexicana de Ciencias
37. Mongolian Academy of Sciences
38. Academy of the Kingdom of Morocco
39. The Royal Netherlands Academy of Arts and Sciences
40. Academy Council of the Royal Society of New Zealand
41. Nigerian Academy of Sciences
42. Pakistan Academy of Sciences
43. Palestine Academy for Science and Technology
44. Academia Nacional de Ciencias del Peru
45. National Academy of Science and Technology, The Philippines
46. Polish Academy of Sciences
47. Académie des Sciences et Techniques du Sénégal
48. Serbian Academy of Sciences and Arts
49. Singapore National Academy of Sciences
50. Slovak Academy of Sciences
51. Slovenian Academy of Sciences and Arts
52. Academy of Science of South Africa
53. Royal Academy of Exact, Physical and Natural Sciences of Spain
54. National Academy of Sciences, Sri Lanka
55. Royal Swedish Academy of Sciences
56. Council of the Swiss Scientific Academies
57. Academy of Sciences, Republic of Tajikistan
58. The Caribbean Academy of Sciences
59. Turkish Academy of Sciences
60. The Uganda National Academy of Sciences
61. The Royal Society, UK
62. US National Academy of Sciences
63. Uzbekistan Academy of Sciences
64. Academia de Ciencias Físicas, Matemáticas y Naturales de Venezuela
65. Zimbabwe Academy of Sciences
66. African Academy of Sciences
67. The Academy of Sciences for the Developing World (TWAS)
68. The Executive Board of the International Council for Science (ICSU)