



EDITORIAL NOTE

A new book on Evolution

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The basic concept of evolution by natural selection was introduced by the British naturalist Charles Robert Darwin (1809-1882). Despite some controversy (e.g., Bock 2009), the general understanding among the scientific community is that another British naturalist, Alfred Russel Wallace (1823-1913), independently conceived the same concept and both ended up publishing their theory in a brief joint publication in 1858, which was followed by Darwin's famous 1859 book, *On the origin of Species by Means of Natural Selection*.

Over the decades, a plethora of new information has come to light corroborating the Darwinian evolutionary theory. Regarding paleontology, important new discoveries are regularly made each year, including some in the most remote places of the planet (e.g., Reguero et al. 2022), although many of these findings are highly fragmentary in nature (e.g., Souza et al. 2023). It is interesting to point out that among the first evidences to support the theory of evolution in Darwin's time was the fossil *Archaeopteryx lithographica* Meyer 1861 (Fig. 1), which shows a reptilian skeleton covered in feathers, indicating that birds are modified dinosaurs (e.g., Kellner & Soares 2024).

At the same time, evolutionary research has benefited tremendously from the development of molecular science (e.g., National Academy of Sciences 2008). The discovery of DNA and RNA, the sequencing of the human genome, and contributions based on how geology influenced the origin of life have also played a major role to the acceptance of the theory of evolution by natural selection (e.g., Menck & Val 2024).

However, contrary to what one might expect, there is still a large percentage of the population in several countries who are quite skeptical about evolution (e.g., Moore 2010). This has led the National Academy of Sciences to publish several books on this subject, which are overseen by the Committee on Revisiting Science and Creationism of that academy. One of the most recent is the book *Science, Evolution, and Creationism* (National Academy of Sciences 2008).

Following this path, the Brazilian Academy of Sciences (ABC) has just published a book on evolution, the first related to this topic by this organization. Using a strong title, *Evolution is a Fact*, ABC wants to present with this publication its official position on this subject, which has become increasingly controversial over the years. The book contains a total of 22 articles (including the introduction) that were written by 28 authors. The coordination was in charge of biochemist Carlos Frederico Martins Menck, a member of ABC.



Figure 1. *Archaeopteryx lithographica*, a fossil found in layers about 150 million years old in southern Germany, is considered the oldest bird. This species became one of the first pieces of evidence supporting evolution in Darwin's time. Specimen deposited in the Natural History Museum of Berlin, Germany.

As pointed out by Nader (2024), this book is a statement by ABC, showing that creationism or intelligent design have no place in explaining the origin and diversification of life on our planet. As is well known, creationism is often strongly combined with anti-vaccine initiatives that can put public health at risk due to low immunization uptake (e.g., Borges et al. 2023). This has become a problem during COVID-19, which has left many with post-pandemic symptoms (e.g., Talhari et al. 2023).

We live in quite strange times. Never before has so much fake news been disseminated, especially on social media, which, unfortunately, is increasingly serving as a source of information for large segments of the population in several countries (e.g., Del Vicario et al. 2016), including Brazil. Chairs being thrown during live political debates (e.g., Molina 2024) and accusations of immigrants eating pets without the slightest evidence (e.g., Catalini et al. 2024) are just some recent examples of absurdities that are being displayed on an increasingly regular basis.

This ABC book on evolution is a welcome addition to several initiatives aimed at communicating science to the public, although much still needs to be done to become more effective (e.g., Massarani et al. 2022). The fact is that we, as scientists, need to communicate more and more with the population and make our voices be heard.

This publication by ABC can be obtained for free at http://www.abc.org.br/wp-content/uploads/2024/09/ABC_Evolucao_redux.pdf.

REFERENCES

BOCK WJ. 2009. The Darwin -Wallace myth of 1858. *Proc Zool Soc* 62: 1-12. DOI 10.1007/s12595-009-0001-9.

BORGES LP ET AL. 2023. Why are measles and rubella returning in Brazil? *An Acad Bras Cienc* 95: e20230832. DOI 10.1590/0001-3765202320230832.

CATALINI M, SMYTH JC & SHIPKOWSKI B. 2024. Trump falsely accuses immigrants in Ohio of abducting and eating pets. The Associated Press, September 11, 2024. Available at: <https://apnews.com/article/haitian-immigrants-vance-trump-ohio-6e4a47c52b23ae2c802d216369512ca5>. Accessed on September 25, 2024.

DEL VICARIO M, BESSI A, ZOLLO F, PETRONI F, SCALA A, CALDARELLI G, STANLEY HE & QUATTROCIOCCI W. 2016. The spreading of misinformation online. *Proc Natl Acad Sci* 113: 554-559. DOI 10.1073/pnas.1517441113.

KELLNER AWA & SOARES MB. 2024. Fósseis: testemunhas da história da vida na Terra. In: Menck CFM (Ed), *A Evolução é Fato*, ISBN 978-65-981763-3-4, Academia Brasileira de Ciências, Rio de Janeiro, RJ, Brazil, p. 156-168. Available at: http://www.abc.org.br/wp-content/uploads/2024/09/ABC_Evolucao_redux.pdf. Accessed on September 25, 2024.

MASSARANI L, DA SILVA CM, AMORIM L & MARIA DMS. 2022. Science communication activities at research institutes in Brazil: Recent expansion on the way to professionalization. *An Acad Bras Cienc* 94: e20201936. DOI 10.1590/0001-3765202220201936.

MENCK CFM & VAL AL. 2024. Introdução - A teoria da evolução é um fato. In: Menck CFM (Ed), *A Evolução é Fato*, ISBN 978-65-981763-3-4, Academia Brasileira de Ciências, Rio de Janeiro, RJ, Brazil, p. 10-17. Available at: http://www.abc.org.br/wp-content/uploads/2024/09/ABC_Evolucao_redux.pdf. Accessed on September 25, 2024.

MOLINA T. 2024. Datena é expulso após jogar cadeira em Marçal, que sai de debate. *Metropolis*, September 16, 2024. Available at: <https://www.metropoles.com/sao-paulo/datena-e-expulso-apos-jogar-cadeira-em-marcal-que-sai-de-debate-veja>. Accessed on September 25, 2024.

MOORE R. 2010. The revival of creationism in the United States. *J Biol Educ* 35: 17-21. DOI 10.1080/00219266.2000.9655730.

NADER HB. 2024. Prefácio. In: Menck CFM (Ed), *A Evolução é Fato*, ISBN 978-65-981763-3-4, Academia Brasileira de Ciências, Rio de Janeiro, RJ, Brazil, p. 5-6. Available at: http://www.abc.org.br/wp-content/uploads/2024/09/ABC_Evolucao_redux.pdf. Accessed on September 25, 2024.

NATIONAL ACADEMY OF SCIENCES. 2008. *Science, Evolution, and Creationism*. The National Academies Press, Washington, DC, USA. Available at: <http://nap.edu/sec>. Accessed on September 25, 2024.

REGUERO MA ET AL. 2022. Late Campanian-Early Maastrichtian Vertebrates From The James Ross Basin, West Antarctica: Updated Synthesis, Biostratigraphy, And Paleobiogeography. *An Acad Bras Cienc* 94: e20211142. DOI 10.1590/0001-3765202220211142.

SOUZA GA, BULAK BA, SOARES MB, SAYÃO JM, WEINSCHÜTZ LC, BATEZELLI A & KELLNER AWA. 2023. The Cretaceous Neornithine record and new Vegaviidae specimens from the López de Bertodano Formation (Upper Maastrichtian) of Vega Island, Antarctic Peninsula. *An Acad Bras Cienc* 95: e20230802. DOI 10.1590/0001-3765202320230802.

TALHARI C, CRIADO PR, CASTRO CCS, IANHEZ M, RAMOS PM & MIOT HA. 2023. Prevalence of and risk factors for post-COVID: Results from a survey of 6,958 patients from Brazil. *An Acad Bras Cienc* 95: e20220143. DOI 10.1590/0001-3765202320220143.

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