



“Science in the fight against misinformation and denialism”

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Science has been attacked and mistreated. In addition to the lack of investment, scientific denialism and pseudosciences have found fertile ground to thrive on social networks at a time of an uncertain future. The pandemic has highlighted the importance of public research institutions and universities, and amplified the voices of scientists, journalists, and science disseminators, who have acted tirelessly to combat the fallacies and beliefs that swarm everywhere. Even so, we observe troubling setbacks and, especially during the pandemic, we are flooded daily with promises of miraculous cures, questioning of vaccines, and denial of consolidated facts, such as the importance of distancing and wearing masks.

These days, to engage oneself in the fight against pseudosciences (dubious methods and practices that disguise themselves as science) and misinformation (false or misleading information that is deliberately spread) is an ethical and humanitarian imperative. But how to do that? One of the ways is to disseminate science. It is important to show how research is done, the hard work of researchers, and the importance of continuing to invest in the formation of people and infrastructure continuously, so that we can at least wish a sustainable development. Also, it is vital to promote the awareness of science and the enchantment by its incredible beauty, how it permeates our life, and how far we could advance thanks to it. Alongside, it is worth warning about the absurdity and danger of pseudosciences and denialism, which can go far beyond the seemingly harmless and ludicrous flat earthers.

The main thing, however, is that we, as a society, make every effort to better understand scientific methods and stimulate critical thinking and to face reality, however harsh it may be, demonstrating confidence in the results of science, which, as Edward O. Wilson (*in Consilience: The Unity of Knowledge*), “... is neither philosophy nor a belief system, it is a combination of mental operations that has become increasingly the habit of educated peoples, a culture of illuminations hit upon by a fortunate turn of history that yielded the most effective way of learning about the real world ever conceived.”

I will discuss some practical examples of how to pinpoint pseudosciences, and how we, as scientists, students and communicators, can engage in this important battle.



Marcelo Knobel is a Full Professor of Physics and he was the 12th Rector of the University of Campinas (Unicamp), in Brazil, institution to which he has been linked for more than three decades.

Prior to becoming Rector, Knobel held several leadership roles at Unicamp. He was the first Executive Director of the Unicamp Exploratory Science Museum and served as Vice-Rector for Undergraduate Programs. He was responsible for implementing an innovative interdisciplinary program, named ProFIS, which combines social inclusion with general higher education. This initiative gained him the 2013 Peter Muranyi Prize in Education. Knobel held other important roles outside of Unicamp as well, including Vice-President of the Brazilian Physics Society and Executive Director of the Brazilian Nanotechnology National Laboratory (LNNano) at the Brazilian Center for Research in Energy and Materials (CNPEM). He is currently a member of the CNPEM Board of Directors. He is the editor-in-chief of the Journal of Magnetism and Magnetic Materials (Elsevier), and he was editor-in-chief of *Ciência & Cultura*, a science and technology magazine published by the Brazilian Society for the Progress of Science (SBPC) during 10 years.