# 30 Why Care About the Higgs Boson

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There are cases where the benefit of a discovery is clear and direct. A few years ago the Nobel Prize for Chemistry went to people that worked on computer models describing how large molecules such as proteins behave and react [1]. Everyone understands that this can lead to easier drug design. The same goes for the Nobel Prize for Medicine of the same year [2]. Understanding cell communication mechanisms can lead to faster treatments of various diseases.

On the other hand, a discovery in particle physics can be of paramount importance because it tells us that the model we have of the cosmos still holds but it is not clear where it could lead us. For example, we verified the existence of the Higgs boson and thus the Higgs field that gives mass to other particles that scientists predicted years ago. The general public, citizens whose taxes are used for such research, will often wonder about the big fuss and why such projects are being funded when there are so many other pressing everyday problems to deal with. The truth is that we cannot know the effects of such discoveries and it may be many years before we realize the actual impact and any dramatic changes in our lives.

From astronomical observations, important theories were developed that describe the gravity of bodies and centuries later we had the theories of relativity. Humanity built on that knowledge and several decades later we had technologies that gave us our satellites, the GPS and the ability to send scientific instruments to other worlds. We also had observations of atomic properties that led to quantum theory and decades later we had lasers and computers. But how can the non-specialist contemporary of Newton, Einstein and Planck know how important all these things are and where they will lead ... Even for the experts it is very difficult to predict the impact of all that we constantly discover.

My message is that it is not necessary for the practical impact to be immediate in order for the discovery to be important. Anything that reveals how the world works is important on both a philosophical and a technological level. We can always talk about our deep need as a species to explore and answer questions but history has also shown us that basic research leads to significant practical outcomes that improve our lives considerably sooner or later.

And for the reader that enjoys finding articles online, surfing the internet and exploring cyberspace, I have this final comment: In order to find if the Higgs boson exists, we built the largest particle accelerator at CERN . . . and it was there that the World Wide Web of the Internet was developed.

## References

1. The Nobel Prize in Chemistry 2013. The Nobel Prize. Available online: https://www.nobelprize.org/prizes/chemistry/2013/summary/ (accessed on 11 September 2018).
2. The Nobel Prize in Physiology or Medicine 2013. The Nobel Prize. Available online: https://www.nobelprize.org/prizes/medicine/2013/summary/ (accessed on 11 September 2018).