UNIVERSITÀ DEGLI STUDI DI PADOVA

SHANGHAI SUMMER SCHOOL
VENICEASIAGO2016

DATE: 31st August 2016
TIME: 9:00 - 10:15
LOCATION: Osservatorio Astronomico di Asiago, via dell'Osservatorio, 8; Asiago, Vicenza

Errors and frauds: the obscure side of science

Prof. Ernesto Carafoli
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ABSTRACT

Errors and frauds in science have always occurred but have increased dramatically in recent times. The main reason for the increase is the "publish or perish" atmosphere that has pervaded science, in which publishing a high profile paper is the factor that decides whether a researcher will have a successful career or is forced out of science. A number of technical measures are now increasingly trying to ameliorate the situation, however, only the end of the unhealthy scrambling to publish at all costs, and to do so in the high profile Journals that dominate the world of science, will heal it completely and conclusively.

FURTHER READINGS

1) Carafoli, E. (2015). Scientific misconduct: the dark side of science. Rend. Fis. Acc. Lincei. DOI 10.1007/s12210-015-0415-4.

UNIVERSITÀ DEGLI STUDI DI PADOVA

SHANGHAI SUMMER SCHOOL
VENICEASIAGO2016

DATE: 31st August 2016
TIME: 10:30 - 12:00
LOCATION: Osservatorio Astronomico di Asiago, via dell'Osservatorio, 8; Asiago, Vicenza

The evolutionary choice of cellular signals: why Calcium?

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ABSTRACT

Calcium carries messages to virtually all important functions of cells. Although already active in unicellular organisms its role has become universally important after the transition to multicellular life.

In this lecture we explore how calcium ended up in this privileged position. Most likely Its unique coordination chemistry has been a decisive factor as it makes its binding by complex molecules particularly easy, even in the presence of large excesses of other cations, e.g. magnesium.

Its free concentration within cells can thus be maintained at the very low levels demanded by the signalling function. A large cadre of proteins has evolved to bind or transport calcium. They all contribute to buffering it within cells, but a number of them also decode its message for the benefit of the target. The most important of these "calcium sensors" are the EF-hand proteins. Calcium is an ambivalent messenger: while essential to the correct functioning of cell processes if not carefully controlled spatially and temporally within cells it generates variously severe cell dysfunctions, and even cell death.

FURTHER READINGS

1) Brini, M., et al., (2013). Chapter 4. Calcium in health and disease. *In:* A. Sigel, H. Sigel, and R.K.O. Sigel (Eds.), Interrelations between Essential 81 Metal Ions and Human Diseases, *Metal Ions in Life Sciences*, 13: 81–137. DOI 10.1007/978-94-007-7500-8_4.