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Highly Speculative Hypotheses: Introducing a New Heading of Our Journal

Russian style of scientific thinking is characterized by attempts to find solutions of global problems. This requires generation of hypotheses. Experimental validation of these hypotheses can promote discovery of new phenomena. N. K. Koltsov used to say that even a poor hypothesis is much better than nothing. Various hypotheses exist: local and generalized, very probable and very speculative (which may share some similarity with fantasy). At the moment of hypothesis "delivery" nobody can predict its fate. About fifty years ago the Nobel Prize Winner Albert Szent-Györgyi wrote a brochure. Only the title of that brochure, "Bioenergetics", is now remembered in science, but this title named a whole branch of biological knowledge.

Editorial boards of scientific journals always face difficult choices: should or should not they publish this or that hypothesis. It is a very complicated problem. Most of the Western journals do not accept hypotheses for publication; they prefer to recommend authors of such hypotheses to submit their manuscripts to special unpopular journals specializing in publications of hypotheses. Some journals publish hypotheses in special headings. This often means the existence of some limits to fantasy. If a hypothesis exceeds these limits it will not be published. The limits of fantasy vary from journal to journal. For example, the journal *Medical Hypotheses* regularly publishes extremely speculative but very interesting suggestions by J. Bowls, a biologist-evolutionist from Chicago. He always begins his papers with a sarcastic remark: "It was not supported by any grant". Such papers would not have any chance to be accepted for publication in *FEBS Letters*.

Grouping the whole bulk of theoretical manuscripts under several headings (e.g., reviews, hypotheses, and speculative hypotheses) might solve this difficult situation provided that each section has its maximal level of speculation. We have decided to test this way in our journal. Announcing this we have chances to get an avalanche of papers from graphomaniacs and maniacs such as engineers of biological perpetual engine or extra-senses. So we warn that papers for this new heading "Highly Speculative Hypotheses" will be selected only on the basis of their scientific evaluation. But how to distinguish a reasonable limit of scientific fantasy? This difficult task will have to be solved by four independent referees. Personality of an author is also important especially if he is a distinguished scientist and his previous suggestions have been confirmed. The first author opening our new heading "Highly Speculative Hypotheses" is Alexey Olovnikov. In the seventies he proposed under-replication of eukaryotic linear DNA and predicted the existence of telomeres and telomerase. Two years ago lack of such a section in our journal did not allow us to publish his paper, where Olovnikov considered Ca^{2+} "fountain" from perinuclear space through calcium channels of nuclear membrane inside the nucleus. This paper was successfully published by *Molecular Biology* (Moscow) (see [8] from Olovnikov's paper in this issue) and that idea was experimentally confirmed. As shown by Bunney et al. (2000) in their paper entitled "ATP-dependent regulation of nuclear Ca^{2+}-levels in plant cells" (*FEBS Letters*, **476**, 145-149) measurement of Ca^{2+} concentrations in various sites of the nucleus revealed the existence of some clear zones near nuclear membrane with significantly higher Ca^{2+} concentrations.

Olovnikov's new hypothesis, which he introduces here, consists in suggestion that man and animals have some biochemical "device" for measurement of their life span. The author proposes that relatively short DNA (chronomere) plays the key role in this device. Olovnikov suggests that such a chronomere exists in a chromosome as an additional strand. During the life time the chronomere localized in central nervous system cells shortens due to effect of some hormones released into blood stream by a certain gland. Chronomere shortening attenuates living functions and this attenuation basically represents aging.

Alexey Olovnikov had already opened a new heading in our journal. Several years ago we asked him to organize the first special issue of this journal with mini-reviews. That issue was devoted to telomerase. Many distinguished scientists such as Nobel Prize Winner T. Chech and L. Hayflick accepted Olovnikov's invitation to submit a paper to that issue. The impact-factor of our journal immediately increased and the telomerase issue of *Biochemistry* (Moscow) still has the best citation index among other issues of this journal published during recent years. I hope that the "lucky hand" of Olovnikov will help us in this new heading as well.

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