



*The **CRE**ation of the Department of Physical Chemistry of Biological Sys**TE**ms [CREATE]*

666295 — CREATE — H2020-WIDESPREAD-2014-2015/H2020-WIDESPREAD-2014-2

What will be hot in science – can we predict trends?

A meeting inspired by the ERA Chair holder
[WP3]

Level of dissemination: PUBLIC

Warsaw, June 2017



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 666295

In April, 2017 at the assembly of the Scientific Council of the Institute of Physical Chemistry of the Polish Academy of Sciences (IPC) – the ERA Chair holder, Professor Maciej Wojtkowski, and Professor Robert Hołyst, CREATE Project Coordinator, initiated a discussion on prospective scientific topics. As a result of this discussion some comments and recommendations were given such as:

- programme of PhD studies should be upgraded to orientate young people for the future,
- development of emerging & promising scientific topics should be supported by external funding institutions with adequate acceptance of risk,
- prospective scientific topics can result from inspiring environment – international conferences attendance, lab visits, and participation in networking events should be encouraged.

Professor Wojtkowski also suggested to extend number of participants of such a discussion and to go beyond the Scientific Council. For this reason a series of debates – opened for junior researchers (including PhD students from the “[Interdisciplinary Nanoscience School: from phenomenology to applications](#)” [NaMeS], funded under Cofund, MSCA initiative) was established by Professor Hołyst and Professor Wojtkowski.

The first debate took place on the 2nd June, 2017 at the seminar hall of IPC and was chaired by Karina Kwapiszewska, a PhD student at Professor Hołyst’s Group. First of all, Karina made an introduction into the topic and gave a presentation entitled “*What will be hot in science – can we predict trends?*”. The introduction was interrupted by participants provoking a discussion. Karina stressed that in science, just like in business, there are two paths to success. One can create new trends (and be a leader), or just follow the trends (becoming a follower). Karina also made a comparison to business – saying that in this sense a leader was “Apple” while “Samsung” was a follower, and both companies succeeded. The participants agreed that both paths of doing science are needed, and result in further development of science. The leaders acting individually neither can discover a ‘hot topic’, nor research it thorough. Science is pushed forward by followers observing the leaders and giving own input into the knowledge.

Karina continued that distribution of the number of citations proves that after an epoch-making discovery it takes 15-20 years to develop it. She also pointed out that an increase of the number of citations is a good indicator allowing to predict whether a given research topic would continue to develop. If number of citations falls, the topic will not probably become attractive for a researcher. She gave an example of fluorescence correlation spectroscopy, PCR, STED microscopy, and microfluidics. Professor Hołyst commented that in the case of falling number of citations a topic may become attractive and ready for commercial use, giving an example of microfluidics.

Subsequently, the discussion on the following subjects aroused:

- definition of a successful topic (number of papers, commercial success, prizes?);
- start-point of a successful topic (basic knowledge, technical advancements, any other?);
- a drive of a successful topic (basic knowledge, technical advancements, any other?);
- how do these topics develop (answering questions or provoking new questions?);
- social factor (authorities vs. privates, funding, imagination);
- can we predict trends in science?

As the result of the discussion a group agreed to continue discussion in a form of a duel between Professor Wojtkowski’s and Professor Hołyst’s group. Both groups are supposed to discover an emerging research topic and present it at the next meeting. After a discussion other participants will vote to select the winner. The duel will take place after the summer break.

Presentations: speech delivered by Karina Kwapiszewska, moderator of the discussion.