

Editorial

The CNCCS, a benchmark Italian consortium for bioeconomy and an opportunity for the Istituto Superiore di Sanità

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BioEconomy is the word for a recently arisen paradigm that constitutes the inspirational principle of CNCCS (Collezione Nazionale Composti Chimici e Centro Screening – National Collection of Chemical Compounds and Screening Centre), a newly public-private partnership in Italy. BioEconomy postulates that science can be safely coupled with economy and that from such “unritual marriage” would derive a benefit for the society triggering welfare through innovation. The CNCCS is composed by the National Research Council (CNR), the temple of Italian research, the Italian National Institute of Health (ISS), the leading research institution of the National Health System, and the IRBM Science Park, a private company with the most advanced technology for exploiting organic compounds. The CNCCS is funded by the Italian Ministry of Education, University and Research (MIUR) through the CNR to encourage a never-seen-before synergy between public research bodies and private institutions. The scientific power of CNR and ISS merging with IRBM’s resources for the identification and collection of chemicals will make the CNCCS the leading reference European centre for “orphan” compounds.

Why such an effort? Why the ISS should mingle in a public private partnership? The role of basic research is under scrutiny and poorly tolerated when a depressed economy and stakeholders (patients, families, society in general) put great pressures to direct the objectives of science toward goals that must result in benefits for society. The ISS has a special responsibility because its role is to address the needs of society by taking up the challenges of science beyond the existing limits. The ISS foresees that the CNCCS consortium would better serve the scope of science and society, a goal that is unattainable by science or industry alone.

Private-public enterprises are quickly rising and institutional research bodies are becoming partners of charities, large pharmaceutical companies, and small biotech firms for looking at novel and affordable drugs for the cure of neglected diseases. Examples of these enterprises are the Malaria Vaccine Initiatives, the Medicines for Malaria Ventures, the Global Alliance for TB drug development, and the Drug for Neglected Diseases Initiatives.

What would be the contribution of the CNCCS consortium for the society and the general welfare in terms of health and economy? The quality of science in Italy is higher than lay people think despite poor

public and private investments. In Italy, particularly in the ISS, there is a long-standing tradition in the field of organic chemistry with tens of thousands molecules continuously synthesized in public and private research laboratories. Unfortunately, most of discovered molecules “sit on the shelf” of academic and scientific laboratories and are poorly or not tested for potential therapeutic applications, limiting their potential value.

The joined effort of the CNCCS partners would guarantee an extended lifespan of the molecules entrusted in the repository and would serve as a national high throughput hub for the identification of novel lead compounds for targets of interest. In the CNCCS, the efficacy of collected molecules is investigated for scopes that are beyond their original intended use. This is obviously done with the agreement of the original inventor who retains the patent for the first intended purpose and gives the consortium the right of exploring any possible further use of the molecule.

Entrusting the results of his/her research into a repository is certainly an act that requires a fresh attitude toward science, something that could be defined as a step away from the bench and a plunge into reality.

The CNCCS commissioned an ad hoc study to Fabio Pammolli, an economist and director of the IMT institute for advanced studies in Lucca for investigating how life sciences impact on the territory by enhancing the economical growth of society and producing wealth. The study showed that despite a high rate of scientific publication (Italy ranks 4th in the world), our country lacks a parallel rate of production in industrial and technological research. At regional level, however, the study showed a positive effect of “translated science” since the number of publications and patents, which are indices of innovation outcomes, correlates with wealth and productivity (unpublished data). Thus, this study confirms the pressing need of knowledge integration and urges scientists and policy makers to bridge the gap between academia and industry.

Scientists and pharmaceutical companies should break old schemes and seeking new ad more productive alliances. We are at a deadlock with scientists publishing thousands of “chemical scaffolds” that are far from being a “drug” and pharmaceutical companies reluctant to invest money in research of new leading drugs, because the pay back for investments is becoming more and more uncertain.

In this panorama, public institutions like ISS and CNR should take the lead in opening new avenues to the public-private partnership, particularly in areas where there is a mounting strong disinterest from pharmaceutical companies.

Given the complexity at stake (huge number of people involved, political issues, co-morbidity, etc.), rare and neglected diseases are the most likely areas to derive benefit from the joined public-private approach. To testify its commitment to these themes, the CNCCS has recently (end November 2011) organized the Rome International BioEconomy Conference, centred on rare and neglected diseases, with speakers chosen for their scientific, political, or industrial (pharmaceutical companies) background to create a fruitful melting pot on BioEconomy. During this event, a 80,000 \$ prize was awarded to

Ruggero De Maria, former head of the Hematologic, Oncology and Molecular Medicine Department, ISS, and Peter Vogt, the Scripps Institute (CA) for their pivotal work on cancer therapy.

The global economy and the trend towards a worldwide impoverishment have brought the everyday's constraints of real life into science; there is also a decreased empathy toward basic research and a certain annoyance of the scientist's "ivory tower". Willingly or not, scientists are nowadays confronted with increasing difficulties in finding grants and are often obliged to make compromises to sustain their research by jumping into fashionable research projects or to join "muscular" international groups. With half of their time spent in pursuing money instead of solving scientific quests, a more direct move toward economy is welcomed and eventually the society in its entirety will benefit from the trade.