



On April 16 2015 biologists, physicists, chemists, biochemists, bioengineers, environment scientists, computer scientists and mathematicians from An Najah, Al Quds, Bethlehem, Birzeit Universities, Palestinian Polytechnic Universities, as well as from the Francis Crick Institute (UK) and the Instituto Gulbenkian de Ciência (Portugal), the CNRS and the Universities of Bordeaux and Lille (France) gathered in the amphitheater of the Said Khoury building for Development studies at Birzeit University to present their work and discuss their common interests and prospects. Together they decided to create a multidisciplinary network for the study of biological systems in Palestine (acronym PalBioSys).

The creation of the PalBioSys network is based on the following analysis.

Biology, physics, chemistry, mathematics, engineering and computer science have contributed to our knowledge of the structure and the dynamics of the components of living systems. Yet, in living systems, most physiological functions are not carried by a single molecule; they result from dynamic interactions between multiple components in complex molecular factories or functional modules. Most developmental programs in normal or pathological conditions do not rely on a few key master genes, but on complex regulatory networks and processes.

Understanding and controlling the dynamic behavior of these functional modules, core processes and regulatory networks in living cells and tissues is made possible today by the advent of high throughput and new molecular microscopy/biophotonic techniques. These new interdisciplinary approaches require the knowledge of biological systems at different levels of complexity and the use of dedicated technical platforms. There are examples of basic and applied fields where multidisciplinary approaches open new perspectives:

- Biomolecules; from charge landscapes to the function and regulation of key enzymes and molecular assemblies
- Cell biology; from metabolic and regulatory networks to human diseases
- Cell biology; tracing molecules and organelles, imaging molecular events in living cells and tissues, manipulating bioprocesses with nanocarriers
- Physical mechanisms of morphogenesis in normal development and disease,
- Plant biology; mechanical signals, growth coordination and stress response,
- Ecological systems, host-pathogen relationships, evolution dynamics, population genetics and lineage assessment, biodiversity and bioremediation...

The success of such approaches depends on strong interactions, networking and close collaborations between experimental and theoretical, fundamental and applied researchers. It is expected that results will have measurable outputs with major impacts on environmental, medicine and health programs in Palestine and will be highly relevant for developing countries as well.

Today computational research in biology plays a new and important role in modeling and simulation for both the conception and the analysis of experiments. It can be performed away from the experimental platforms. It requires expertise, computers, software and interactions with biologists. It offers real opportunities to Palestinian researchers living behind a wall, in the same way that scientists in Eastern Europe were recognized experts in theoretical physics before the fall of the iron curtain.

The members of PalBioSys know that interdisciplinary ventures are demanding. They require time, in part due to the need to understand each other language and concept. They require expertise in one discipline while recognizing the limit of this discipline, and the respect of partner competences. On appropriately identified subjects they can bring added value much beyond the sum of individual specialties.

The aim of the PalBioSys network is to foster collaborations for the development of interdisciplinary research and training programs in the study of biological systems and processes in Palestine.

This development will be achieved through the organization of short intensive courses and focused workshops, as well as students and faculty member exchanges, M.Sc and PhD co-supervisions. A major emphasis will be put on hands-on training for students. Small capacity building projects as well as more comprehensive projects such as Erasmus+ strategic partnerships will be implemented.

The building of the PalBioSys network is a bottom up process.

PalBioSys is open to scientists and engineers who share the vision of driving forward into interdisciplinary research presented above and are willing to share competence and resources. Inspired by the effectiveness of boycotts in the effort to abolish apartheid in South Africa during the 1980s, members of PalBioSys endorse the call to comprehensively and consistently boycott all Israeli academic and cultural institutions in the framework of [the BDS campaign](#). PalBioSys is an opportunity to foster collaborations among Palestinian Universities, with a special attention to Gaza Universities, as well as between Palestinian Universities and scientific institutions abroad.

The PalBioSys network will circulate Information about funding opportunities and facilitate partnerships between members for mutual development and research advancement.

A scientific board will be identified whose members will represent PalBioSys in their Institutions. This board will orchestrate the network activities and assume related responsibilities, while promoting collective decision making.

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