

History of Biotechnology Training and Education in Iraq

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The first Institutional adoption of Biotechnology in Iraq was made in the mid-1980s where the "Scientific Research Council" hosted the newly established research "Center of Genetic engineering and Biotechnology" (GEB). The Center was established in 1986 following two years of preparation and after the government ratification of the status of the "International Center of Genetic Engineering and Biotechnology" (GEBRC). GEBRC is one of the UN organizations and has two main components, one is in Trieste-Italy and the other is in New Delhi-India. The Trieste center conducts Basic Genetics research while Delhi center is focusing on infectious diseases research. The Iraqi center was recognized by GEBRC as national focal point similar to more than 40 other centers worldwide coordinating with GEBREC. However, with the abolishing of the whole Scientific Research Council in November 1989 by governmental decision, the GEB survived only three years and not given the opportunity to take an active role in Iraq Bioscience.

Formal Biotechnology Education in Iraq started in 1993 with the establishment of the "Department of Biotechnology" in the College of Science/ University of Baghdad. The department grew to take a key role in technology transfer and was soon after recognized as National Focal Point for ICGEB. The head of the department became Iraq's liaison officer to this organization. The department was the first in the country to offer university degree in Biotechnology. It was among the first few in the region too. With the international economic and scientific sanction during the 1990s, the department was good solution as national alternative for scholarships to acquire this science. The department was well organized into Medical, Industrial and Agricultural Biotechnology. Students' research yielded solid results but stopped short from application due to inadequate funding. The department attracted the attention of the united nations special commission (UNSCOM teams) during the 1990s sanction imposed through UN resolutions following the second Gulf war. It was put under close monitoring for no good reason which was one of the problems to the freedom of the department. In any case, the department was successful in using local alternatives to its research and educational need.

In the mid-1990s, another "Biotechnology research center" was established within the re-organized Atomic Energy Commission. The center was involved in Industrial research.

During this decade, many educational departments in Biotechnology were established in Iraq universities but were under-equipped. Teaching rather than research was the main activity. Examples of these are the "Bioengineering Department" of the University of Technology, "Food Biotechnology" in Baghdad University college of Agriculture and Biotechnology Branch in Babel University. However, the "Biotechnology Department" established during this period in Al-Nahrain University ((Sadam University previously) college of Science had better financial support. Its open excess to the university graduates further developed its mission.

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In 1998, the "Biotechnology Research Center" was founded in Al-Nahrain University. The project started with a report written a year earlier by senior academic in the University of Baghdad to the ministry of Higher Education. The report requested organizing a team to acquire the then new concept of animal cloning and to formulate project aiming at transfer technology of Dolly (the sheep) cloning. After several meetings and recommendations, the decision came to establish this center attached to the president of Al-Nahrain University under the auspices of the Education department in the presidency office. A founding committee formulated plan for the project and a road map was established to achieve similar animal cloning. It was very challenging task under the sanction but the technology was achievable shortly before the US invasion. The center opened a venue for Al-Nahrain student's research. These students were enrolled in the Department of Biotechnology of Al-Nahrain College of Science. After the war and occupation, the new administration of the center shifted the direction into more of plant-related Biotechnology research!

In March 1999, the ministry of Higher Education decided to establish new "institute for Genetic Engineering and Biotechnology for postgraduate studies" (IGEB). Its deanship was attached to the presidency of the University of Baghdad to give it the required financial and administrative support. The objective was to foster the development of an indigenous biotechnology capability during a period of isolation of the Iraqi scientific community from advances in science and technology and from international contact due to the severe shortage of technical fellowships, scholarships and scientific exchanges. At this time, most of the country's human technical capital resided with senior scientists who were educated abroad and remained in Iraq after the imposition of sanctions. Since its establishment, the IGEB has been recognized as one of Iraq's advanced research institutions. Luckily, the institute escaped major damage during 2003 invasion, was not impacted by the subsequent looting, and so attracted the interest of international organizations focused on rebuilding science in Iraq.

IGEB is independent from other schools or colleges in the University to support national technical objectives. The IGEB offers post graduate (Higher Diploma, MSc; PHD.) studies in medical, agricultural/veterinary, industrial/environmental genetics and biotechnology. Training is credit-based during the first year of study followed by research projects (Higher Diploma; one year, Masters Programs; 2-years and PHD; 3- year program).

The institute boasts hundreds of geneticists and biotechnologists working in the education or research sectors trying their best to establish or upgrade existing biotechnology laboratories. Research Highlight includes Genetics of cancer, Genetic diseases, Molecular analysis of infectious bacteria, Bio separation of active ingredients in medicinal plants, and DNA profiling. Training is offered in PCR and basic molecular techniques plus extraction and purification of active compounds. The Institute includes two scientific departments (Genetics, Biotechnology) and one DNA research unit. A senior professor, with more than 30 scientific and technical staff members, directs each department.

In 2010, the "Forensic DNA training center" started to operate in Al-Nahrain University. The establishment story of this center of excellence started in September 2005 during a conference in Amman/Jordan that was organized by both, Sandia National Laboratories (SNL)/ US department of Energy and Arab Science and Technology Foundation (ASTF)/ UAE. In this conference, a proposal to establish Forensic DNA capability was submitted by senior Iraqi scientist who was pursuing the idea for many years earlier. After the war and occupation, such project became necessity with the rising episode of violence and un-identified bodies of victims in the streets. The proposal was

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