



Biosafety and Biosecurity Centre

Established in October 2015, the Biosafety and Biosecurity Centre forms a unique platform for studies and research projects related to the preservation of human health and the environment. With experts in the fields of microbiology, virology, molecular biology, environmental health and safety, and risk assessment and management, the centre offers specialized laboratory-testing services for various types of specimens and focuses on technology transfer, education, training and the capacity building of local and regional institutions.

Our centre comprises of the Division of Health and Molecular Sciences and the Division of Biological-Chemical Safety and Security Services, in addition to the Division of Pharmaceutical Studies.

All our analyses are conducted in conformity and according to Standard Operating Procedures (SOPs).

What we do:

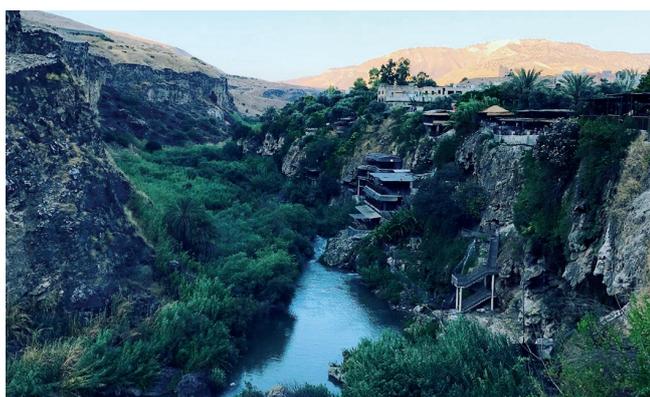
- Undertake joint research work that addresses human and environmental health and safety
- Apply quantitative and qualitative analysis to address health issues
- Study the prevalence of antibiotic resistant elements in various water sources, including reclaimed water used to irrigate crops
- Assess the risks of exporting, importing and trading genetically modified food and feed in local markets
- Assess the efficiency and effectiveness of vaccines included in the National Vaccination Program of the Ministry of Health
- Develop a bio risk management system in the laboratories of research, diagnostic and academic institutions

We provide:

- Routine analysis and testing to genetically detect different pathogens in water, sludge, food, and other clinical samples
- Detection of genetically modified organisms (GMOs) in food & feed samples
- Identification of food fraud using the polymerase chain reaction (PCR) technique
- Bio / chemical risk assessment studies
- Specialised research, technical studies and capacity building

Examples of our recent projects:

- Understanding the Risk of Bat-Borne Zoonotic Disease Emergence in Western Asia: This project aims to create a regional network of bat experts in the Middle East and surrounding countries, to enhance research collaboration and to conduct joint projects related to bat ecology, distribution, and disease investigations. The project is conducted in collaboration with the EcoHealth Alliance (EHA) and the R. Lugar Center for Public Health Research/Georgia and is supported by the Defence Threat Reduction Agency (DTRA)/USA.
- Assessing Sludge Quality and Related Biosafety Aspects at Muta – Mazar WWTP (Wastewater Treatment Plant): This project assesses the quality of sludge generated





from the Muta – Mazar WWTP and the related health risks from potential reuse of the sludge, it also includes a component for capacity building in monitoring and risk management of national laboratories. This project has been ongoing since 2016, and is commissioned by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The project furnishes for replicating the experience as it provides the necessary information related to risk management of sludge generated from wastewater facilities.

- Detection of Rotateq® Reassortant Strains in Stool Samples of Jordanian Children: This research project aims to assess the effect of the newly introduced Rotateq® Vaccine into the national vaccination program in Jordan and on the prevalence of Rotavirus infections in Jordanian children who are less than five years old. This project is funded by Abdelhameed Shoman Foundation.
- Mobile Phone Application for a Fast and Efficient Assessment of the Biosecurity System in Research and Diagnostic Laboratories: This project has two main goals: to develop a new assessment tool for the biosecurity systems in research and diagnostic laboratories by using a specialized mobile application and to create an electronic inventory control system for the RSS Biosafety & Biosecurity Centre. This project is funded by CRDF-Global (USA).

Some of our recent publications:

- Bat Research Networks and Viral Surveillance: Gaps and Opportunities in Western Asia
Phelps, K.L., Hamel, L., Al-Hmoud, N.D., Ali, S., Bilgin, R., Sidamonidze, K., Urushadze, L., Karesh, W., & Olival, K.J. (2019)
- Bioinformatics and Biostatistics Applications in Tobacco Smoking Research. *Frontiers in Public Health*
Ibrahim, M.A., Abdel-Salam A-S.G., Al-Hmoud, N.D., Hassani, H.H. & Verma, J.P. (2018)
- Developing a Biosecurity Culture in the MENA Countries
Al-Hmoud, N.D. (2014)
- Unconventional P-35S Sequence Identified in Genetically Modified Maize. *GM Crops & Food*
Al-Hmoud, N.D., Al-Husseini, N.T, Al-Obaide, M.A., Kübler, E., Farfoura, M., Al-Obaide, H. & Al-Rusan, H. (2014)

Facts about our centre:

- Our Centre offers specialized laboratory testing services including tracking genetically modified elements in food and feed samples, detecting enteroviruses and resistant genes in sludge & wastewater samples, detecting Nipah virus in food and identifying fraudulent meat products.
- Our centre hosts and manages the MENA Bio-Chem COMPASS online platform. This enables a collaborative community of practice to share training materials and resources throughout the Middle East and North Africa (MENA) region with a focus on safety and risk prevention for laboratory and research contexts.