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## STEPHEN AND NANCY GRAND WATER RESEARCH INSTITUTE

<http://gwri.technion.ac.il/>



STEPHEN AND NANCY GRAND  
WATER RESEARCH INSTITUTE



THE STEPHEN AND NANCY  
GRAND WATER RESEARCH  
INSTITUTE



## GWRI MISSION

The Stephen and Nancy Grand Water research Institute - GWRI Mission is to promote and support research and management of Israel's water resources, maintaining Technion's leading position and Israel's world leadership in the domain.

The Tehnion, given its international and regional pre-eminence in science, engineering and technology, relies on the GWRI leadership to continue the line of research excellence that provides solutions to water-associated problems.

Clean and contaminant-free sources of water are existential to a country located in one of the most water scarce regions of the world. Israel heavily relies on new resources derived from desalination, sustainable use of reclaimed wastewater, mainly for irrigation, and on purification of brackish water. The ability to coordinate and jointly manage the severe water scarcity problems in the middle-east is crucial for establishing good regional relations and can serve as a platform for cooperation leveraging!



## GWRI COMMITMENT

The GWRI emphasizes advancement of water science, engineering and management tools in Israel, the Middle East and other water sensitive regions worldwide. The GWRI focuses on innovative approaches, technologies and tools aiming at finding sustainable and new ways to overcome water shortage and preserve the quality of the water resources: at lowest possible cost, while saving energy and considering environmental and ecological impacts. The GWRI is committed to lead water research in Israel, while maintaining good working relations with the academic, research and industrial sectors both locally and internationally.



## MAIN RESEARCH AREAS



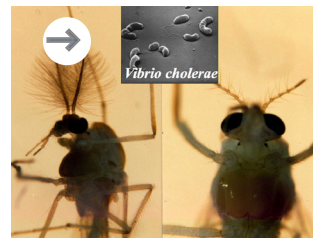
### WATER TREATMENT, DESALINATION, AND TREATMENT OF WASTEWATER

- Water treatment (physico-chemical, biological).
- Advanced desalination technologies.
- Membranes: design-synthesis-modifications-testing- modeling.
- Energy saving and environmental aspects.
- Wastewater treatment: biological, chemo-physical, membranes, SAT.
- Nanofibers/Nanotubes/Nanochannels.
- Post-treatment of desalinized sea water.
- Treatment of industrial wastewater.
- Grey-water recycling and management aspects.



### PRESERVATION OF WATER RESOURCES, HYDROLOGY – SOURCE QUANTITY AND QUALITY, WASTEWATER REUSE & EFFICIENT IRRIGATION

- Hydro-geophysics.
- Hydrological processes, including climate change effects.
- Monitoring & Modeling at various scales.
- Forecasting scenarios.
- Fluid-dynamics of complex water systems.
- Development of advanced analytical and monitoring tools.
- Investigation of nutrients, salinity and pollutants fate in water affected systems.
- Reuse of reclaimed wastewater for sustainable crop production. water use efficiency.



### WATER AND ENVIRONMENTAL MICROBIOLOGY

- Applied Genomics and Water Microbiology.
- Pathogen survival in water systems and in plants irrigated with reclaimed wastewater; Tracing microbial processes in water and wastewater treatment.
- Advanced methods for bacterial detection.
- Microfluidics-for advanced bio-sensing.



### MANAGEMENT OF URBAN WATER SYSTEMS, WATER RESOURCES MANAGEMENT AND POLICY

- Water resources systems analysis.
- Management of Water distribution systems.
- Utilization of evolutionary single and multi-objective optimization models.
- Security and reliability aspects.
- Stochastic/deterministic systems.
- Water resources under uncertainty and risk.
- Water sensitive planning.
- Enviromatics- utilization of distributed multi-modal (physical, chemical and biological) sensor networks for water sensing.