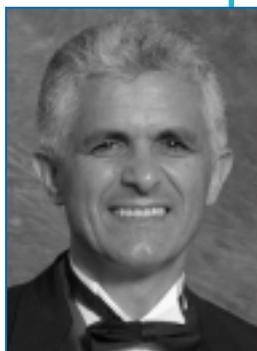


Dr. Menachem Elimelech of Yale University Receives 2005 Clarke Prize



Dr. Menachem Elimelech

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For over a decade, the Athalie Richardson Irvine Clarke Prize has been awarded to outstanding scientists for excellence in water research. This year, the Prize was presented to Dr. Menachem "Meny" Elimelech for his groundbreaking contributions to water-quality issues, particularly in the area of drinking-water treatment.

One of the youngest scientists to receive the Prize, career-wise, Dr. Elimelech first started conducting research only 20 years ago as a graduate student in Israel. His research interests lie in the "quality aspects of water," which include understanding the processes involved in the contamination of water and the technologies used to remove these contaminants.

"I am very humbled and pleased to win the Clarke Prize," said Dr. Elimelech, who is the Roberto C. Goizueta Professor of Chemical and Environmental Engineering at Yale University. "This is the kind of honor you always dream about."

Established by NWRI in 1993, the Clarke Prize is only one among a dozen water prizes awarded

worldwide. It has been named by the International Congress of Distinguished Awards as one of the most prestigious awards in the world.

"We are delighted at the very significant honor that the Clarke Prize gives to Professor Elimelech," said Paul Fleury, Dean of the Faculty of Engineering at Yale University, where Dr. Elimelech has taught since 1998. "It is gratifying to see that the worldwide water research community already recognizes his extraordinary energy, creativity, and leadership, as do all of his Yale colleagues. We bask in his reflected glory."

Dr. Elimelech received the Prize's gold medallion and \$50,000 check from NWRI co-founder Mrs. Joan Irvine Smith at the Twelfth Annual Clarke Prize Award Ceremony and Lecture, which was held on July 7, 2005, at the St. Regis Monarch Bay Resort & Spa in Dana Point, California. Over 250 people attended the award ceremony, which featured Dr. Elimelech's lecture, "The Global Challenge for Adequate and Safe Water." After the lecture, Dr. Elimelech was surprised and delighted when his 18-year old daughter, Noa, took the stage as a special guest performer to sing a moving

rendition of "Wind Beneath My Wings" in his honor for this special occasion.

As part of the ceremony, Dr. Elimelech also received another honor in the form of letters of commendation from distinguished admirers, including university presidents, governors, senators, congressmen, and the President of the United States.

"Congratulations to Dr. Elimelech as you are recognized for your many contributions to the study of aquatic systems and natural water processes," wrote President George W. Bush. "I appreciate the good work of Dr. Elimelech and all those dedicated to solving environmental issues. Your



The family of the late Athalie Clarke present the Clarke Prize award to Dr. Menachem Elimelech. From left: Elizabeth Penniman, Russell Penniman, Dr. Elimelech, Joan Irvine Smith, and Morton Smith.

Food and Processing Company Cargill Becomes an NWRI Corporate Associate

Cargill, Incorporated — one of the largest food trading and processing companies in North America — has joined NWRI in its efforts to solve critical water issues by becoming an NWRI Corporate Associate.

NWRI established the Corporate Associate Program in 1993 as a means to create opportunities among university researchers, utilities, manufacturers, and consultants to work together and support the practical application of water-related research.

“Having Cargill as a Corporate Associate is a great asset,” said NWRI Executive Director Ron Linsky. “With its help, we can better understand and examine the issues facing the food and agricultural industries, which are among the largest users of water in the world.”

With more than 100,000 employees in 59 countries, Cargill is an international provider of food, agricultural, and risk management products and services. Committed to nourishing people, it is involved in everything from partnering with farmers in growing crops and raising animals to expanding food markets and streamlining supply chains. Cargill provides food and food ingredients to large companies around the globe.

According to Dr. H.S. “Murali” Muralidhara, Vice President of Corporate Plant Operations and Manager of Process Technology at Cargill’s headquarters in Minnesota, Cargill made the decision to become an NWRI Corporate Associate because, “Joining NWRI would allow us to become aware of the challenges and opportunities within water research.”

For instance, he said, “We use large volumes of water when we process food. So it is critical to understand and maintain both the quality of water that comes into our plants for processing and the quantity

of water that we use to process at the large-scale.”

Cargill’s involvement with NWRI is not limited to just research. Through a joint NWRI-Cargill Fellowship, graduate student Kenneth Mercer of the University of Massachusetts-Amherst will receive a \$10,000 award this upcoming school year for his project on the “Development and Application of a Treatment Model for High Ionic Strength Waste Streams” (see article on page 3).

This research, which is directed towards treating industrial wastewaters, is important to Cargill because, as Dr. Muralidhara said, “Many food processing plants produce high ionic strength industrial wastewaters, and this wastewater has a tendency to cause fouling in membranes used in water treatment processes. Therefore, a fundamental understanding, as proposed, will allow us to better define process improvement conditions in real life.”

In other words, research like this could help Cargill produce cleaner water and pursue the future option of recycling its wastewater during food processing rather than send the wastewater to a treatment plant for disposal.

Funding for this Fellowship is coming from Cargill’s “Water Matters” program, which gives back to the community by supporting water-related activities.



Members of the NWRI Corporate Associates are part of a network devoted to resolving global water issues. Some of the benefits of membership include building collaborative partnerships with NWRI researchers, gaining access to information from NWRI projects, and receiving complimentary registration to NWRI workshops or conferences. For further information, please visit www.NWRI-USA.org.



Dr. H.S. Muralidhara



Upcoming Workshop in China on Upgrading Water Quality

The *International Workshop on Novel and Enhanced Water Treatment Technologies for Upgrading Water Quality* will be held September 6-8, 2005, in Tianjin, China, to discuss the latest technological and scientific developments associated with drinking-water quality.

Workshop topics include:

- ◆ Protection and remediation of drinking source-water quality.
- ◆ Pretreatment technologies.
- ◆ Enhanced coagulation.
- ◆ Dissolved air flotation.

- ◆ Enhanced filtration.
- ◆ Activated carbon adsorption.
- ◆ Disinfection and byproducts formation control.
- ◆ Water quality in distribution systems.

The registration fee is tentatively set at USD 300, which covers workshop attendance, proceedings, and meals and refreshments.

For further information, please contact Professor Jun Ma of the Harbin Institute of Technology (China) at telephone 00-86-451-86282292, fax 00-86-451-82368074, or email either majun_hit@163.com or majun@hit.edu.cn

Fellowship Given for High Ionic Strength Waste Stream Research

The year 1993 was significant for Wisconsin-native Kenneth Mercer. For one, it was the year he graduated from high school. For another, it was the same year that there was a treatment failure at a water treatment plant in Milwaukee, Wisconsin, resulting in a massive outbreak of the waterborne parasite, *Cryptosporidium*, that sickened over 400,000 people. The outbreak put *Crypto* on the map in terms of detecting and removing it from drinking water. It also made Ken start thinking about water treatment.

“That year, the outbreak was all over the local and national news,” he said. “It brought to the forefront water treatment and its effects on public health, and I think that it planted a seed as I went off to college.”

Though he studied Chemical Engineering as an undergraduate at the University of Wisconsin-Madison, he began taking courses in Civil Engineering with a professor whose focus was water treatment — a subject that Ken quickly found fascinating. At the same time, he discovered that some of his college classmates and their families had become sick during the outbreak.

“Meeting people who were directly affected by the outbreak in Milwaukee really drove home the importance of protecting public health,” he said. And it made him want to do something about it. As an undergrad, he interned with the Environmental Health Service, where he helped monitor campus beaches and participated in air- and water-quality studies. Then, during his last semester, he took a job with the U.S. Geological Survey as a hydrologist in its water resources division, working on projects such as monitoring the dredging of pollutants that were spilled into a tributary of the Green Bay by a large paper company.

After earning his bachelor’s degree, Ken moved on to the University of North Carolina at Chapel Hill (UNC) to earn a master’s in environmental engineering, with a focus on drinking-water treatment. At school, the faculty took note of his hard work and dedication and awarded him the 2002 UNC Department of Environmental Science and Engineering Bunker Award for Outstanding Scholarship and Professional Promise.

Ken didn’t disappoint, for he was hired fresh out of college by MWH, a consulting firm that is considered one of the world’s top experts on power, water, and wastewater issues. During his 2-years with MWH, he worked on water quality and treatment issues in the Northern California region; it was working on one particular project that gave him the idea to go back to school for his Ph.D. The project was on exploring the use of a novel ion-exchange process, which worked very well as a pretreatment process for drinking water, but resulted in a concentrated waste stream. The problem was, what do you do with the waste?

So Ken went to the University of Massachusetts-Amherst to find out. Having just finished his first year

as a Ph.D. student, Ken is actively working on his research project, which is called the “Development and Application of a Treatment Model for High Ionic Strength Waste Streams.” This project was recently awarded an NWRI-Cargill Fellowship because of its potential applicability towards treating industrial wastewaters.

“Every drinking-water treatment process produces at least two streams: one is the clean water that is passed on to consumers,” he said, “and the other is the waste that you are left with, called the residual stream, and it has a high concentration of contaminants. I’m particularly interested in the residual — or concentrate — produced by desalting membrane processes.”

Membrane treatment systems are important, he said, because they can treat poor quality water that other treatment processes can not. The only downside is the resulting concentrate stream. In certain coastal areas of the United States, for example, membrane concentrate can be disposed of by discharging it into the ocean or by deep-well injection; however, those options are not available to everyone, especially inland communities, who may have to send it to a wastewater treatment plant or use an advanced evaporation system. Ken hopes that, if he can remove specific contaminants (like arsenic) from concentrate waste streams, it will pave the way in increasing concentrate disposal options and/or allow for its possible reuse.

He is also interested in high ionic strength waste streams because the more ions that are in the water, the more chemical properties can change, making the concentrate more difficult to treat.

“High ionic waste streams have a lot of dissolved solids, some of which may have potential environmental impacts,” he explained. “Drinking water usually has a low ionic strength, while dirtier waters (like brackish waters or concentrated waste streams) have a higher ionic strength. It’s interesting from a chemistry perspective to try to deal with contaminants in a high ionic strength concentrate, which are going to be affected by the fact that concentrations are elevated, as well as by the overall high ionic strength. It’ll be a very interesting project.”

The final product of his research is anticipated to be a treatment model that can help determine how to best dispose of the concentrate. “Imagine,” he said, “that you want to build a treatment plant and you have brackish groundwater as your source. You may want to use membranes to treat it, but you don’t know how to dispose of the concentrate. My hope is that you’ll be able to use the treatment model we’re developing to calculate, based on your water quality, what’s the best way to dispose of it both economically and for the environment.”



Kenneth Mercer

The Value of Water

By CHERYL DAVIS

Director, San Francisco Public Utilities Commission

Having been in the water industry for 20 years (10 of those years in customer service, the other 10 in water supply treatment services), I have had many opportunities to listen to water managers talk about the value of water. This is my take on the “voice” of the water industry, as perceived by the public we serve:



Cheryl Davis

“You idiots out there want clean, reliable water every minute of every day, but you don’t want to pay for it! You knuckleheads can barely spell the word ‘water,’ yet we’re at your mercy at every rate hearing! If it’s not you crybabies we have to listen to, it’s environmentalists, regulators, and liberals who drive up our costs even further! Is this what I got a degree for? How many years until retirement!?!”

The following questions will gauge your own assessment of the value that American water managers assign to water.

Question 1: Where did these quotes come from?

“The music of water is endlessly intriguing, whether it is the arpeggio of a waterfall, the improvisations of a stream, or the crescendo of a wave.”

“So it’s pleasure, water is. It’s everything.”

“Water, like music, is absolutely essential to life, and their similarities are almost frightening.”

- A. American water utility officials at last year’s American Water Works Association conference in Orlando, Florida.
- B. American water utility officials on the streets of San Francisco during this year’s conference, after they got hold of some medical marijuana.
- C. Three musicians asked to express their opinions about the value of water.

Question 2: Who said this?

“Who cares how it tastes or looks? It meets regulatory standards!”

- A. A customer buying coffee frappe at Starbucks.
- B. A customer buying bottled water at Safeway.
- C. A water manager selling water that doesn’t taste good to customers.

Question 3: The following quote is from a water-quality report sent out to the public on the water they are drinking. How do you think the message comes across to the public?

“The total trihalomethanes in parts per billion average 62. The unit is ppb. The MCL is 80. The PHG (MGLG) is NS, and the range is 11-46.”

- A. Wow, that’s great! This water is wonderful! I should be bottling this and sending it to my relatives as Christmas gifts!
- B. There are more potential contaminants in my tap water than I ever dreamed possible.
- C. My tap water is one step up from toxic waste. Eat, drink, and be merry, for tomorrow I may die.

Question 4: Which most closely describes the cultural values of Americans today?

- A. They love abundance, comfort, and excess. In terms of automobiles, that means SUVs. In terms of water, that means irrigated lawns, swimming pools, and free-flowing fountains like those that the Moors built in Granada.
- B. They love the concept of scarcity. They like their fountains dry. They’d rather ride a camel. In terms of vegetation, the plant they find most aesthetically pleasing is a cactus.

Question 5: Of the following groups, which do you believe have (or did have) the deepest appreciation of the value of water?

- A. The American water industry in 2005.
- B. The American water industry at the turn of the century.
- C. Ancient Romans.
- D. Primitive cultures.

Now, I’ll provide you with my perspective on these questions.

First, I think that it is a water industry myth that we value water more than anybody else does. Sometimes, we seem to view water as nothing more than a product. Many of the broader and deeper aesthetic, emotional, and spiritual values that have been clearly visible to people throughout history, as expressed through poetry, song, art, sculpture, and in the fact that many gods and goddesses have been

Continued from Page 4

identified with water and rain, seem invisible to the American water industry. At the World Water Forum in Kyoto, Japan, in 2003, there was discussion of these cultural components. They were even singing songs about water in one session that I attended!

When I visited Spain a few years ago, I toured the water facilities in Granada. That utility had published a book full of art, photography, and poetry on the beauty of water. At Lisbon, their staff showed me a public education film that portrayed water as a sexy young woman who worked with the water industry (a handsome young man) to help her provide her gifts to humanity. It had the tone of a myth, and was not a fact sheet or cartoon.

In the American water industry, we sometimes tell ourselves that we cannot afford aesthetics, but Granada's water utility was a public-private partnership and the art book was published by the private partner. Another story that we tell ourselves is that aesthetics have been trumped by technology; however, Lisbon had an excellent supervisory control and data acquisition (SCADA) system, as well as a strong public education program that included a museum and a decommissioned reservoir that was being used for concerts and art shows. It is quite possible to be both technically and culturally advanced.

It is also possible to respond to the priorities of regulators without ignoring the values of our customers. We are, for good reason, very attentive to the performance measures set by regulators, whether those are related to the health or environment; however, we sometimes discount values that are important to our customers: taste, odor, color, aesthetics, and (in the case of bottled water)

convenience. It is not surprising that customers sometimes have trouble hearing us when we have such trouble hearing them.

We also tend to think of customers as a block, failing to notice both differences in what they value and differences in what they can afford to pay. We tend to assume not only that rates are going to rise, but that everybody's rates are going to rise equally; however, the fact that water's value is high doesn't mean that everybody is going to be able to pay high rates. The value of water to the economy as a whole is such that heavy investments need to be made, but the only way to achieve that may be for water rates to be variable.

Finally, I'd like to put in a word on the behalf of excess. Sometimes, I think we in the water industry enjoy telling people to turn off fountains and stand in the freezing cold while they soap up for the shower. That "hair-shirt puritan" mentality is not endearing. It is not that potable water should be wasted, but that our industry could embrace recycled water as a way to provide abundance and all the solace and comfort and joy that water has provided over the years. We can support abundance without encouraging waste.

My impression is that we in the water industry do, in fact, love water in broader and deeper ways than we now discuss with each other or communicate to the public. I think we will be more successful in getting the public to value and pay for water when we make our own values more visible.



This article was first presented as a speech at the American Water Works Association Conference in San Francisco, California, in June 2005.

Value of Water Video Now Available

To learn more about the value of water, check out NWRI's newest educational video, which brings together economists, water experts, and Native Americans to explore one of the most basic, yet controversial, questions in the water industry: what is the value of water?

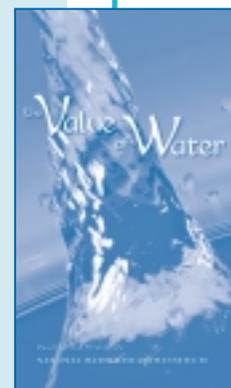
Released in early 2005, "The Value of Water" is the sixth program in NWRI's "Water From Water" series, an outreach effort meant to inform the public about significant water issues facing the nation.

What is the value of water? It's a simple question that's very hard to answer, says the

video because, too often, water is viewed as a limitless and free resource that no one should have to pay for.

This 23-minute video explores the value of water to the Hopi Indian tribe in Northern Arizona, where water is a limited resource in the desert. It also looks at the value of water to the Tres Rios Wetlands Project in Phoenix, Arizona, which uses natural biological processes to treat wastewater diverted into a man-made wetland.

The video is now available to purchase for \$24.95. Please visit www.NWRI-USA.org to order.



Christina Fuller Joins NWRI as Administrative Support Assistant

NWRI is pleased to welcome Christina Fuller to the staff as Administrative Support Assistant. She has replaced Ashley Hyde, who moved to Oregon in March.

Christina was born and raised in Waterbury, Connecticut, and earned a Bachelor's degree in Communications at Quinnipiac University, a private college in nearby Hamden, Connecticut. According to Christina, her school specialized in mass communications and had "better equipment than the local news stations," which gave her the opportunity to take a wide variety of classes, from English Literature to film studies and courses on both print and TV journalism. She "loved being in front of the camera" and even considered becoming a news anchor or entertainment reporter after graduation.

But it wasn't a desire to be on TV that drew Christina to California. A self-described free spirit, Christina and two college friends decided to move to the sunshine state to leave behind the cold climate of the East Coast. Without knowing anything about California, they pulled out a map and randomly picked a coastal city to live in that looked close to Los Angeles. They chose "Surf City" itself — Huntington Beach. That was 6 years ago, and Christina hasn't looked back since.

In fact, it was in her new hometown of Huntington Beach that Christina met her husband, Mana. Since Mana's name means "power" in Hawaiian, they decided to name their son "Ikaika," which is Hawaiian for "warrior." Ikaika is now 4 years old, and Christina enjoys taking advantage of California's great weather by taking him to the beach or park for weekend picnics.

One disadvantage Christina did note about living in Southern California was the long commutes she faced when she first started working here. Her first job was as an administrative assistant for the CEO of McCrory Corporation, whose office was located in Beverly Hills — a 1-hour drive one way from Huntington Beach (in good traffic). Christina also worked 3 years with Platinum Equity in Century City, a large mergers and acquisitions company, where she was responsible for accounts payable and administrative duties.

At NWRI, Christina has a wide variety of responsibilities, from fulfilling book orders placed on NWRI's website to answering the phones. She also particularly enjoys event planning, and looks forward to helping organize and prepare for NWRI activities like upcoming workshops or advisory board meetings.

What she likes most of all about her new job at NWRI is the fact that "everyone has welcomed me and made me feel like we are part of an extended family. I love coming to work everyday."



Christina Fuller

Meet Our Newest Research Advisory Board Members

NWRI's research program is reviewed and evaluated semi-annually by its Research Advisory Board, whose members represent expertise from academia, private sectors, public utilities, and regulatory agencies. Recently, NWRI added two new members to the board.

Leta K. Crawford-Miksza, Ph.D., MPH

**Research Scientist Supervisor II,
Chief, Food Microbiology Section,
Food and Drug Laboratory Branch**

**California Department of Health Services
(Richmond, CA)**

A public health microbiologist, Leta Crawford-Miksza has worked for the California Department of Health Services (CDHS) since 1986, and was recently appointed Chief of the Food Microbiology section of the Food and Drug Laboratory Branch. Among her duties, she supervises the laboratory, organizes the U.S. Food and Drug Administration (FDA) and

CDHS Emergency Response Team, and prepares reports, lectures, and presentations. Prior to this position, she was a virologist with CDHS, working with major virus families causing significant human disease, such as adenoviruses. She also organized and coordinated a food emergency response network between federal, state, and local laboratories, as well as developed and validated molecular test methods to detect microbes in food. A Commissioned Officer of the U.S. FDA, Dr. Crawford-Miksza received a B.S. in Microbiology and Chemistry from the University of Arizona, and both an MPH in Biomedical Laboratory Sciences and Ph.D. in Microbiology from the University of California, Berkeley.



Dr. Leta Crawford-Miksza

NWRI's Newest Projects Focus on Reverse Osmosis and Fecal Coliforms

A public-private partnership, NWRI provides financial support to scientists and engineers around the world to conduct water- and wastewater-related research. Twice a year, its Research Advisory Board meets to review current projects and to select new projects for funding. These projects fall under four key thrust areas of research: treatment and monitoring, water-quality assessment, knowledge management, and public health.

This May, the Research Advisory Board approved funding for the following three research projects:

The Role of Extracellular Polymeric Substances on the Fate and Transport of Fecal Coliforms in Groundwater Environments

PRINCIPAL INVESTIGATOR:

Sharon Walker, Ph.D.
University of California, Riverside

Dr. Walker's research will investigate the extent to which *Escherichia coli* (*E. coli*), a bacteria, is transported through porous media specifically to examine the impact of metabolic and environmental conditions on the production and composition of extracellular polymeric substances (which may coat the surface of a bacteria and cause it to adhere to minerals) and its subsequent influence on adhesion.

Interstage Crystallization to Enhance Two-Stage Reverse Osmosis Recovery

PRINCIPAL INVESTIGATOR:

Greg Leslie, Ph.D.
University of New South Wales (Australia)

Interstage crystallization is a process in which the concentrate from the first stage of a two-stage

reverse osmosis system is treated to bring about the precipitation of soluble salts prior to the second stage. This international project seeks to optimize interstage crystallization to increase recovery from reverse osmosis systems using Australian feed water. The resulting data is expected to be beneficial to the progress of inland desalting in both the United States and Australia.

Coupled Effects of Scaling and Colloid Deposition on the Performance of Reverse Osmosis Membrane Filters

PRINCIPAL INVESTIGATOR:

Vladimir Tarabara, Ph.D.
Michigan State University

Dr. Tarabara's project addresses the problem of membrane fouling, which is the most significant factor hampering the further application of membrane technology towards water treatment. This research will elucidate the interactions between different mechanisms of reverse osmosis membrane fouling by colloid-bearing feed waters and will develop quantitative relationships for the prediction and control of permeate flux and rejection as functions of feed water composition.



NWRI accepts research project proposals twice a year. For further information and to download a research project proposal application, please visit www.NWRI-USA.org.



S. Walker



G. Leslie



V. Tarabara

Newest Research Advisory Board Members

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Patricia L. Meinhardt, MD, MPH, MA

Executive Medical Director

Center for Occupational and Environmental Medicine, Arnot Ogden Medical Center (Elmira, NY)

For the past 16 years, Patricia Meinhardt has provided medical expertise in the recognition, treatment, and prevention of water-related disease resulting from the natural, accidental, or intentional contamination of drinking and recreational waters. An occupational and environmental medicine specialist, she provides technical assistance and medical consultation to numerous advisory boards and committees targeting environmental health

issues, with recent emphasis on waterborne diseases resulting from acts of water terrorism. Currently, Dr. Meinhardt is Executive Medical Director of the Center for Occupational and Environmental Medicine, where she directs a national program to educate healthcare practitioners concerning the diagnosis and treatment of waterborne disease resulting from biological, chemical, and radiologic contamination. Dr. Meinhardt received an M.D. from the Medical College of Pennsylvania and a Masters of Public Health in Epidemiology from The Johns Hopkins University. Prior to her medical training, she received both a B.A. in Biological Sciences and an M.A. in Botany (with an emphasis in Environmental Sciences) from the University of Montana.



Dr. Patricia Meinhardt

Water-Quality Engineer Receives Clarke Prize



Clarke Prize Laureates:
(standing, from left)
Dr. Bruce Rittmann,
Dr. Walter Weber,
Dr. George Tchobanoglous,
Mrs. Joan Irvine Smith, and
Dr. Charles O'Melia;
(seated, from left)
Dr. Vernon Snoeyink,
Dr. Menachem Elimelech,
and Dr. Joan Rose.

Continued from Page 1

spirit of innovation and professionalism reflects the best of our Nation.”

Dr. Elimelech’s pivotal research has addressed areas critical to improving the quality of drinking water, including technologies ranging from riverbank filtration to nanofiltration to desalination. One of his most important areas of research has been in investigating the behavior, fate, and transport of suspended particles (including microbial pathogens, like bacteria and viruses) either in groundwater or in engineered treatment processes, which has proven critical in removing these contaminants from water. He has also significantly impacted the areas of water recycling and pollution control through his research on the effective use of membrane technologies for removing emerging contaminants, such as hormones and pharmaceuticals, from water. Among his many achievements in the membrane arena, he has advanced the process called “ammonia-carbon dioxide forward osmosis” for desalinating brackish and sea waters, which may be more cost-effective than traditional desalination processes. In fact, he just received a major grant from the U.S. Office of Naval Research to build a pilot-scale demonstration plant for seawater desalination using forward osmosis to demonstrate its effectiveness.

Considered a “water-quality engineer,” Dr. Elimelech actually started his academic career relatively late in life, both earning his Ph.D. and accepting his first teaching position at the age of 34. And that’s because, he said, growing up, he didn’t plan on being a scientist.

After graduating from high school in Israel, Dr. Elimelech decided to pursue a military career and became an Officer in the Israeli Air Force, where he was a commander in charge of operating electronic warfare from helicopters to protect fighter jets from enemy missiles. It was the hope of one day living on a farm that eventually made him leave the military

after 6 years of service, and he ended up enrolling at The Hebrew University in Jerusalem to study soil and water sciences at the undergraduate level. But once he started working in the lab, he discovered something new about himself: a passion for research. So, after earning a Master’s degree in Environmental Science and Technology from The Hebrew University, he opted to study at The Johns Hopkins University in the United States for his Ph.D. in Environmental Engineering.

The decision to attend Johns Hopkins was not an arbitrary one. Dr. Elimelech chose it based on the reputation of one of its professors, Dr. Charles O’Melia (also a Clarke Prize Laureate), who quickly became his mentor and role model. They worked so well as a team that Dr. Elimelech’s Ph.D. work on the effect of particle size on particle deposition in porous media with Dr. O’Melia was declared a “classic” for its impact on the field when it received the Best Paper Award from the Association of Environmental Engineering and Science Professors in 2002.

Upon graduating, Dr. Elimelech immediately started teaching at the University of California, Los Angeles (UCLA), where he stayed for the next 9 years, moving up in ranks from Assistant Professor to Full Professor in the Department of Civil and Environmental Engineering. Then, in 1998, he was offered the opportunity to build a new program in environmental engineering at Yale University. Under Dr. Elimelech’s leadership as Director, the program has become so successful that his first three graduating students were given teaching positions immediately after graduation — without doing any post-doc work.

At the same time, his students also recognized what an inspiring and dedicated teacher he is: at UCLA, he was honored with the W.M. Keck Foundation’s Engineering Teaching Excellence Award in 1994; and, out of all the professors in science, medicine, and engineering at Yale, he was selected to receive the Yale Graduate Mentor Award in 2004.

“Meny’s the best,” said former student Dr. Eric Hoek, who is Assistant Professor of Civil and Environmental Engineering at UCLA. “He tries to instill a sense of excellence into his students, and tailors his mentorship to individual needs. He’s deserving of all his awards. I’m so pleased that he’s the 2005 Clarke Prize winner.”

As for Dr. Elimelech, what are his plans now that’s he been named the twelfth Clarke Prize recipient? A humanitarian by nature, he intends to donate some of his winnings to charities for children with special needs in the United States, while continuing to teach and pursue his research with the objective of, one day, ensuring clean, safe water for all people around the globe.

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