

# Manipulating DNA



**Kevin Dorfman**  
Associate Professor, Chemical Engineering and Materials Science

## CURRENT RESEARCH

### Engineering from theory to application

Genes tell our body how to make all the proteins necessary for life and also serve as instructions for proteins to regulate activity within our bodies. Therefore, with technology that has made the mapping of genes possible, scientists have begun to understand which genes are connected to specific proteins and functions. This understanding has proven insightful in determining what goes wrong when certain genes are mutated or missing. Dr. Kevin Dorfman, of the University of Minnesota, works at the interface between engineering, physics, and biology to improve human health using biotechnology. Beginning his academic career at MIT, Dr. Dorfman finished his chemical engineering degree in less than three years. Upon earning his degree, Dr. Dorfman has continued to rigorously approach his research questions with innovation and enthusiasm.

Although he has a reputation in the scientific community for the physics of new genome mapping technologies, Dr. Dorfman's research is multifaceted as he works in theory, simulation, and application on a variety of different projects. On the experimental side, he likes to make microfluidic and nanofluidic devices, using fluorescence microscopy as his major tool to understand how DNA and cells respond inside these devices. On the theory and stimulation side, he uses a wide range of tools for both equilibrium and nonequilibrium systems. Dr. Dorfman remains passionate due to the many unsolved problems that may have direct impacts on technology in the future. Dr. Dorfman's work may one day have a major impact on examining complicated genomes, for example in food or cancer, that are not easily understood by sequencing. Other projects are likely to help detect pathogens, and lead to new...

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## AFFILIATION

 University of Minnesota

## EDUCATION

- Ph.D. in Chemical Engineering 2002, Massachusetts Institute of Technology
- M.S. in Chemical Engineering 2001, Massachusetts Institute of Technology
- B.S. in Chemical Engineering 1999, Pennsylvania State University

## AWARDS

- Allan P. Colburn Award of the AIChE, 2012
- Camille Dreyfus Teacher-Scholar Award, 2010
- DARPA Young Faculty Award, 2009
- Packard Fellowship in Science and Engineering, 2007
- NSF CAREER Award, 2007

## RESEARCH AREAS

Health & Wellness, Longevity, Immortality Research

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Kevin Dorfman, of the University of Minnesota, as he uses the complete engineering toolbox to design new technologies for manipulating DNA. Your donations will support the necessary \$700K required per year for personnel, device fabrication, and computers necessary for experimentation and simulations. In choosing to donate, you will play a role in mapping DNA, and creating technologies that will greatly impact our future!