Combating Super-bugs with Smarter Antibiotics

Anushree Chatterjee
Assistant Professor, Chemical and Biological Engineering

CURRENT RESEARCH

Researching the evolution of super-bugs and creating stronger, more effective antibiotics

As an assistant professor of chemical and biological engineering and the principal investigator of the Chatterjee Research Lab, Dr. Chatterjee is making strides toward reducing antibiotic resistance and ensuring better health for all humans. Since Alexander Fleming discovered penicillin in 1928, the human fight against pathogens and the diseases they cause has improved dramatically. Current research will tell us though, that the microbes are beginning to retaliate in the form of "super-bugs", antibiotic-resistant microbes that do not respond to antibiotic treatment. Dr. Anushree Chatterjee of the University of Colorado, Boulder is at the front lines of this fight, not only creating technology that can synthesize and provide insight into the pathogen's genome, but also assisting in the development of new "smart antibiotics" designed to combat resistance and evolution.

Dr. Chatterjee's work straddles both clinical and corporate settings and can be divided into three categories: an understanding side in which research on microbes is executed in order to yield more information about how bugs evolve, a diagnostic side where a specific pathogen can be identified, and a therapeutic side, where "smart therapy" is applied to antibiotic development so that humans can gain an edge in this arms race.

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    - Dr. Chatterjee and her team have discovered that there are changes in the genome of microbes that enable that pathogen to develop antibiotic resistance. There are specific sequences of genetic data that provide microbes with characteristics that combat and negate the effects of antibiotics. Once that gene is developed, it is often shared with other cells of the same type, creating an...

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AFFILIATION

University of Colorado, Boulder

EDUCATION

- Postdoctoral Fellow, in Theoretical Biology and Biophysics, Center for Nonlinear Studies, 2012 , Los Alamos National Laboratory
- Ph.D., in Chemical Engineering, 2011 , University of Minnesota
- M.S., in Chemical Engineering, 2006 , Indian Institute of Technology Delhi
- B.S., in Chemical Engineering, 2006 , Indian Institute of Technology Delhi

AWARDS

- New Inventor of the Year

RESEARCH AREAS

Life Science, Infectious

FUNDING REQUEST

Your donations will allow Dr. Chatterjee to continue to expand and develop her team of highly-motivated researchers, and continue her collaboration interests with faculty at University of Colorado Boulder, Anschutz Medical Campus, Los Alamos National Laboratory and the University of Chicago. Further funding will also reduce research costs, allowing for clinical trials testing new antibiotics and the development of the nanotechnology sequencing tool and its implementation into practical offices.