

Meet...

Amy Rosenzweig

BIOINORGANIC CHEMIST and STRUCTURAL BIOLOGIST,

Evanston, Illinois

What She's Doing

Amy Rosenzweig wants to know what proteins look like on the molecular level. She uses a technique called X-ray crystallography that reveals how a protein's atoms are arranged, unveiling the unique structures of proteins and enzymes that haven't been seen before by human eyes. Each time the experiment works, she becomes the first person to see that protein up close. That's really exciting, she says.

Rosenzweig enjoys the challenge of solving structure problems. Consulting her X-ray "photo," she fits amino acid "puzzle pieces" together into a map of what the protein looks like. It's like a thousand-piece jigsaw puzzle—in 3D. Rosenzweig builds her proteins at a computer while wearing special stereo glasses, as if she were playing a virtual reality game.

By discovering the chemical ingredients and structures of proteins, Rosenzweig's research can have such wide-ranging applications as reducing greenhouse gas in the atmosphere, improving our ability to use alternative energy sources, and treating human diseases.

"Unexpected things happen all the time in science. It's challenging and exciting. You have to rewrite the story in your head to accommodate the new data."

Her Findings

You may be most familiar with copper from shiny pennies or the not-so-shiny Statue of Liberty, but did you know that it's also an essential mineral in our own cells? Our bodies have extensive networks of specialized proteins that transport copper ions in and out of cells and chauffeur them to particular places within cells.

It's a delicate balance. If any of these so-called "chaperone" proteins don't do their jobs right, copper may not get where it needs to go. Copper-starved proteins may leave us with floppy limbs, bone growths, seizures, and kinky, brittle hair. That's what happens in people with Menkes syndrome. And copper that gets shut out of cells can accumulate in the bloodstream and lead to another disorder, Wilson's disease.

Rosenzweig wants to understand how chaperone proteins get just the right grip on copper ions. She also wants to know what chemicals the proteins are using as their grasping hands. She has already uncovered the structures of several copper chaperones.

Meet more interesting chemists at <http://www.nigms.nih.gov/ChemHealthWeb>.



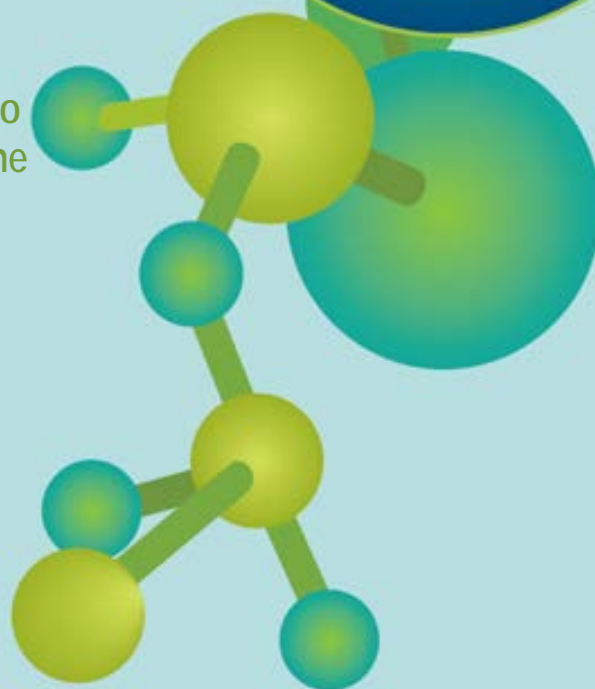
BORN IN
Pittsburgh, Pennsylvania

JOB SITE
Northwestern University
(Evanston campus)

LAST MOVIE YOU SAW
Hannah Montana with my five- and seven-year-old daughters

FAVORITE FOOD
Artichokes

FAVORITE PLACES YOU'VE VISITED
Hawaii and Japan during scientific meetings, Cape Cod in the summers



National Institute of
General Medical Sciences