Developing Anticancer Drugs

Katrina Miranda
Associate Professor, Chemistry and Biochemistry

CURRENT RESEARCH

Dr. Miranda is creating well-tolerated, nontoxic drugs that target many diseases

Disease often develops as a function of being exposed to too much or too little of a certain compound. This chemical could be from the external environment, could be a nutrient in food, or could be produced in the body. When air, which is primarily nitrogen and oxygen, is exposed to unusual conditions such as a lightening storm or hot automobile engines, air reacts to a very small extent to form nitrogen oxides. The levels of these species can accumulate over time such that they become a concern as pollutants. Much lower, nontoxic levels of these same species are made deliberately for example by our cardiovascular and immune systems. Even at these very low levels, when compounds are made in the wrong amount or in the wrong place or time, they can lead to disease. Dr. Katrina Miranda, of the University of Arizona, is interested in understanding the chemistry of disease so that researchers can then find ways to chemically treat disease. Her unique expertise is on studying nitrogen oxides. She studies the chemical changes that these species cause under both normal and disease conditions including chronic pain, heart failure, strokes, and heart attacks in addition to utilizing this information to develop anticancer drugs and therefore presents a new direction of understanding disease processes and treatment.

Dr. Miranda's current focus is on the treatment of breast cancer. Her interest in breast cancer stems from her training at the NIH where she worked with breast cancer patients who were undergoing radiation therapy. While recent improvements in detection and treatment were improving survival rates overall, the individual women who were enrolled in clinical trials at NIH typically had poor prognoses. The...

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AFFILIATION

University of Arizona

EDUCATION

- B.S., American Chemical Society certified in Chemistry, 1989 , Northern Arizona University
- Ph.D., in Chemistry, 1996 , University of California, Santa Barbara

AWARDS

- GPSC Achievement Award for Outstanding Mentor of Graduate/Professional Student, 2010
- Presidential Early Career Award for Scientists and Engineers (PECASE), 2008
- NSF Faculty Early Career Development (CAREER) Award, 2006
- Exceptional Stipend Increase for Outstanding Progress, NIH, 2002
- Fellows Award for Research Excellence, NIH

RESEARCH AREAS

Life Science, Oncology / Cancer, Cardiovascular, Oncology / Cancer

FUNDING REQUEST

Your contributions will support the continued research of Dr. Katrina Miranda of the University of Arizona, as she studies nitrogen oxides species that cause diseases including cancer, heart disease, and chronic pain. Your donations will support the necessary costs for drug development, personnel and supplies. Your support will aid in creating treatments that offer relief to patients with breast cancer, chronic pain, heart failure, strokes, and heart attacks.