



# Meet the Scientist!



As an ecophysiologist, I monitor forest health by measuring the content of stress-related compounds (biochemical indicators) the way doctors use cholesterol and insulin levels in blood tests as indicators of human health.

## Dr. Rakesh Minocha

Ecophysiologist

Ph.D., University of New Hampshire

USDA Forest Service scientist



<http://www.naturalinquirer.org>

### Important Scientist Characteristics

- ★ Curiosity
- ★ Good record keeping
- ★ Critical thinking
- ★ Strong mathematics
- ★ Logic

### Example of a simple research question I have tried to answer:

Can we find out which chemicals inside a tree respond more to stress? Using one of these marker chemicals, can we perform a simple test on parts of trees to find out if they are sick from poor diet, infections, or pollution? These tests are similar to a blood test for sugar.

### Technology or equipment used in research:

I use chromatographic techniques to separate, identify, and quantify stress-related compounds within the cells. I also use a spectrophotometer to study nutrients, chlorophyll, and protein amounts present in the cells. I grow tree tissue and cell cultures in the laboratory to study pollutants effects on the health of the cultures.

### Most Exciting Discovery

Plants that grow under stressful conditions spend more energy to protect themselves. These plants have higher levels of stress-related compounds relative to their healthier counterparts. Thus, they spend less energy in growth processes. Resistant plant varieties produce more stress-related metabolites compared to sensitive ones.

### When did you know you wanted to be a scientist?

I went to high school in India, and there we had to choose between science and arts in eighth grade. I chose science. I did an M.S. in Limnology (study of fresh water lakes and ponds) in India and another in the U.S. Then I did my Ph.D. in breast cancer research.

<http://nrs.fs.fed.us/people/rminocha>