

**Educational Product** 

Educators & Students

Grades 5-12

ET-2004-10-144-ARC

# **Educational Topic**

# **Microbiologist**

#### **Related Job Titles:**

Biologist, Life Scientist, Medical Scientist, Molecular Biologist, Biochemist, Physiologist, Ecologist

#### **Job Description:**

Microbiologists study living things that are too small to be seen without a microscope, such as bacteria, algae or fungi. They are interested in the effects micro-organisms have on plants, animals and humans (for example, how micro-organisms assist in the breakdown and decomposition of living things). Microbiologists are also interested in the uses micro-organisms may have in the environment and people's daily lives, such as cures for human diseases. Microbiologists often work in traditional environments such as laboratories, offices, work stations or universities where they conduct research and a variety of experiments, write and publish papers, or teach.

#### **Interests / Abilities:**

- · Do you like to examine things under a microscope?
- Are you good at observing and then reporting what you see?
- Can you clearly communicate your ideas to others?
- · Do you like to help other people?
- Are you interested in what causes diseases and how they are spread?

#### **Suggested School Subjects / Courses:**

- Biology
- Chemistry
- Mathematics (algebra, trigonometry and calculus)
- Laboratory research and fieldwork
- · Writing and speech

## **Education / Training Needed:**

The minimum education required for this position is a bachelor's degree in Biology, Microbiology, or related field from an accredited college or university. This level generally does not involve research and generally involves assisting others in testing and observation. A master's degree is required for applied research and managerial positions. A Ph.D. degree is usually necessary for independent research.

#### Areas of expertise:

- Bacteria! study of bacteria and their relations to medicine, industry and agriculture
- Mycology! a branch of biology dealing with fungi
- · Viral: a branch of science that deals with viruses
- Food/Industrial: micro-organisms to be used in yogurt, cheese, etc.
- Environmental! identify micro-organisms that may pollute food, water and the environment
- Medical! identify micro-organisms that can be used in medicines or help identify or treat disease

#### **Additional Resources:**

- American Society for Microbiology http://www.asm.org
- Astrobiology Summer Academy http://academy.arc.nasa.gov/
- Bioscience@Work (careers in microbiology)
  http://www.biocareers.org.uk/
- Exobiology at NASA Ames Research Center http://exobiology.arc.nasa.gov/
- Graduate Student Researchers Program http://spacelink.nasa.gov/Instructional.Materials/NASA.Educa tional.Products/Graduate.Student.Researchers.Program.Brochur e/.index.html
- Magazine: Microbiology Today http://www.sgm.ac.uk/pubs/micro\_today/default.cfm
- MATHCOUNTS Competition http://mathcounts.org/
- Minority University Research and Education Programs http://mured.nasaprs.com/
- NASA Astrobiology Institute http://nai.arc.nasa.gov/
- NASA Cooperative Education Program for college students http://spacelink.nasa.gov/Educational.Services/ NASA.Education.Programs/Student.Support/NASA.Cooperative .Education.Program/.index.html
- NASA Jobs http://nasajobs.nasa.gov/
- NASA SHARP Internship Program for highschoolers http://www.mtsibase.com/sharp/
- NASA Student Employment http://nasajobs.nasa.gov/stud\_opps/employment/index.htm

## What can I do right now?

- Take summer jobs or internships at parks, laboratories, museums or camps.
- Read books on nature and the environment.
- Borrow or buy a microscope and look at samples you have collected from soil or water.
- · Visit a natural history museum.
- Join a local biology club or organization.
- Look in the phone book for biotech companies and see if you can arrange a tour or interview a scientist.
- Information on careers in biochemistry and biological sciences: Federation of American Societies for Experimental Biology 9650 Rockville Pike Bethesda, MD 20814 http://www.faseb.org

- NASA Student Involvement Program student contests http://www.nsip.net/index.cfm
- Student's Guide to Astrobiology http://www.astrobiology.com/student.html
- Tech-Interns.com http://www.tech-interns.com/

- Please take a moment to evaluate this product at:
- http://ehb2.gsfc.nasa.gov/edcats/educational topic
- Your evaluation and suggestions are vital to continually improving NASA educational materials.
- Thank you.



http://quest.nasa.gov/people/index.html

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