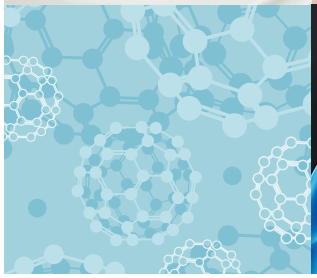
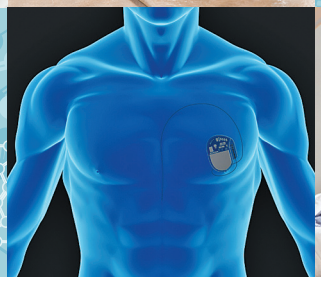
CAREERS IN THE

Life Sciences Industry

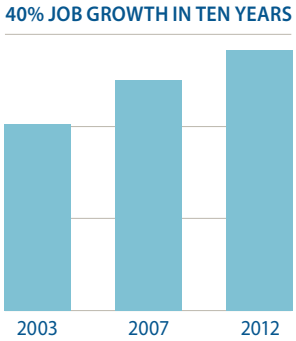




What is life science? Life science means using science to study how living things work. This is an exciting field because it is at the cutting edge of new discoveries and advances in Science and Medicine.

Why would I be interested in the life sciences industry? The life sciences field brings together creative minds and enquiring research to turn the best ideas into exciting new products and services that help people get better, be healthier and live longer.

What will I have to study to start a career in the life sciences industry? Biology is the center of the life sciences, but other STEM (Science, Technology, Engineering, and Math) fields are critical because different skills and talents are needed to take the research ideas from the laboratory and transform them into safe and effective products in the market.



Massachusetts is a global leader in the life sciences.

- Growing industry with 56,500 jobs in 2012
- That's about one life science job for every 70 workers*
- There are now over 500 life science companies in Massachusetts

** Life Science Innovation as a Catalyst for Economic Development. The Boston Foundation (March 2013)*

Some examples of courses to study if you are interested in the life sciences:

Biotechnology studies the use of biological processes, organisms, or systems to manufacture products intended to improve the quality of human life.

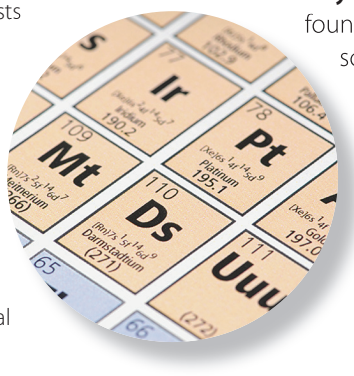
Engineering is about the application of science to design or develop machines, devices, materials, processes and other things.

Genetics is the science of genes, heredity and variation in living organisms, important for understanding diseases and personalizing medicines.

Nanotechnology is the study and application of extremely small things, right down to individual atoms and molecules, e.g. smart materials and biosensors.

Physics is the study of matter, energy, motion and forces fundamental to solving challenging problems for humanity and our world.

Pictured above, clockwise from top left: Laboratory technicians assist life scientists with the maintenance of equipment, conducting experiments, and research activities. ■ Cutting-edge technology allows for the use of myoelectric prostheses in which robotic limbs use biosignals to receive neuromuscular signals from a patient's body. This allows for a patient to control the robotic limb as they would their own body! ■ MRI machines use magnetic fields to provide internal scans of the human body. This allows doctors to diagnosis patients with certain conditions like cancer. **Analogic** in Peabody is a medical instrument manufacturer that develops MRI technology. ■ Biomedical engineers design medical devices which are used to provide a higher standard level of care for patients. Pacemakers are medical devices that help a heart keep a regular rhythm.



Chemistry is one of the foundations of the life sciences. Understanding the periodic table of elements is important because it is composed of the building blocks of life.

ABIOMED

LOCATED IN DANVERS, MA

analogic

LOCATED IN PEABODY, MA

NEW ENGLAND BioLabs Inc.

LOCATED IN IPSWICH, MA

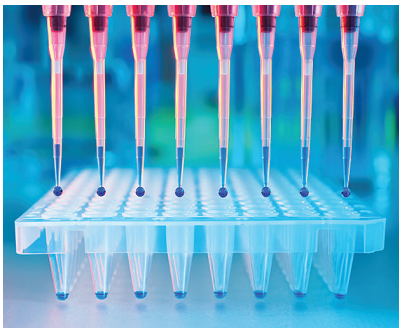
Cell Signaling TECHNOLOGY

LOCATED IN DANVERS, MA

sage science

LOCATED IN BEVERLY, MA

There are eighty-four life sciences companies on the North Shore making a wide variety of products and services.



- **Reagents companies** make products to help researchers discover new medicines e.g. enzymes to identify DNA

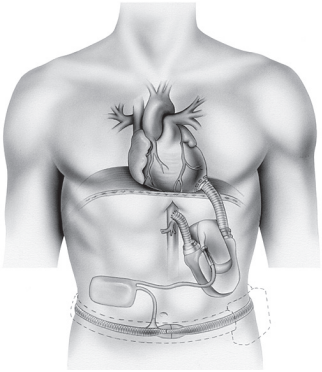
  Reagents are enzymes that are used to identify DNA and RNA. This allows life scientists to unlock the human genome and identify genetic disorders. ***New England Biolabs*** *in Ipswich conducts the research and development necessary to create reagents.*

- **Instrument companies** make special tools to test and measure things in the lab, e.g. very powerful microscopes

  Instrument companies develop the tools used by health care professionals in patient care. These tools require a precise level of engineering when being made.

- **Medical device companies** make mechanical aids or implants to prevent or treat a disease, e.g., artificial heart or limbs, or high tech surgical tools

  Artificial hearts are used when a patient cannot or until they can receive a heart transplant. Did you know that ***Abiomed*** *in Danvers manufactures the Impella, the world's smallest heart pump?*



- **Drug companies** transform research into new medicines to treat diseases, like cancer or diabetes

- **Diagnostics companies** make tests for providing information to help detect and treat disease, e.g. measuring glucose in blood

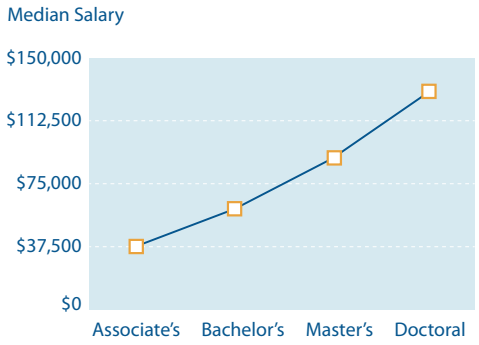
Education, training and examples of jobs at these companies.

There are many different career paths for students interested in life sciences. Usually these jobs require a bachelor's degree. There are also opportunities for those with high school diplomas or associate's degrees.

Companies may offer internships or other programs to show their employment needs. These give students critical hands-on experience about this exciting industry.

If you want to have an impact on the world, enjoy solving problems, have good communications skills and like being part of a team then a career in life sciences is worth exploring for you.

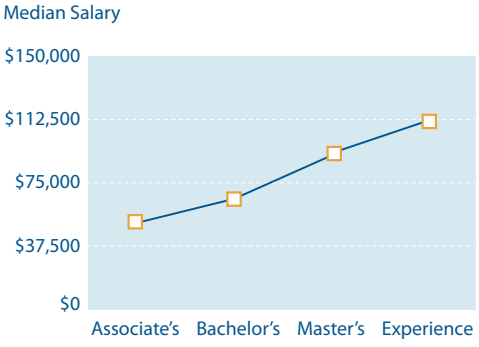
- **Biologists** conduct research to study how living things work. They conduct laboratory experiments using model systems like mammalian cells, bacteria, etc. A career path for a biologist begins with a bachelor's (4 year) degree. Scientists often go to graduate school for master's (1-2 more years) or doctoral (3-5 more years) degrees.



A biologist's salary increases with higher degree and work experience.

- **Laboratory technicians** with associate's (2 year) degrees support scientific research by performing routine laboratory experiments.

- **Engineers** solve complex problems, such as creating replacement body parts (biomedical engineer) or designing and developing complex medical instruments and equipment (mechanical, electrical, software engineer). A career path for engineers begins with a bachelor's (4 year) degree.



Engineering career ladder.

- **Engineering technician**, **drafter** or **kitting** are some examples of engineering support jobs requiring an associate's (2 year) degree.

A job on the North Shore or in Massachusetts is waiting for you!

Online Resources

www.massbio.org
Association of more than 600 life sciences companies in Massachusetts

www.massbioed.org
Offers education programs in science and biotechnology

www.masslifesciences.com
Offers student programs like research internships

https://sciencefromscientists.org
Gives all students the chance to experience the joy of doing real experiments

www.sciencebuddies.org
Will tell you about different life sciences career paths

Careers in the life sciences industry are waiting for you!

NOTES

North Shore Youth career Center
Find it...Get it...Keep it!

Youth Career Center
181 Union Street
Lynn, MA 01901
781-691-7435
www.nscareers.org

NORTH SHORE WIB WORKFORCE INVESTMENT BOARD

North Shore WIB
70 Washington Street
Suite 314
Salem, MA 01970
978-741-3805
www.northshorewib.com