

Judith Pachciarz

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Judith Pachciarz
Physician & Microbiologist
1941-



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Who is Judith Pachciarz?

As the first American deaf person to earn a medical degree and a doctoral degree, Dr. Judith Pachciarz (pronounced Pŭ'-charz) is a pioneer and a leader. An informal 1987 study found that only 2.6 percent of all physicians and only 0.25 percent of currently enrolled medical students reported having a disability, while people with disabilities made up more than 14 percent of the general population.



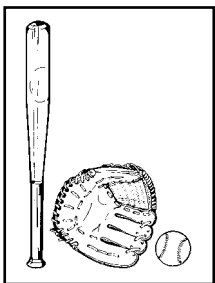
Judith Pachciarz is affectionately known as “Dr. Judy” by her patients and colleagues. She works at the Martin Luther King, Jr., Medical Center in the Los Angeles Department of Health Services. Her areas of expertise include the improvement in quality of *Pap smears* (the collection of tiny samples of cervical tissue); malaria diagnosis by *hemograms*, or “pictures” of the blood; *eosinophilia* (an abnormal increase in white blood cells); and transfusion of safe blood into patients.

An early childhood illness

Judith Pachciarz was born on September 28, 1941. At the age of two, she became sick with *encephal meningitis*, an illness that causes inflammation of the brain, and had a very high fever. She was in a coma for six days. The fever affected the nerves in her ears and resulted in her deafness.

Judy grew up in Danville, Illinois. Her father was a coal miner and firefighter and her mother was a teacher. She is the oldest of six children and one of nineteen grandchildren of Polish immigrants. In order for Judy to attend a public school program when she was three years old, her mother drove her 80 miles back and forth to school each day. When she was six years old, she attended regular classes with children who did not have hearing impairments. She always sat in the front row so she could more easily read the teacher’s lips, and she read and studied other students’ notes. Each day, Judy also attended a special class where she practiced lip reading and speaking. Her favorite subject in school was math. She graduated seventh in her high school class of 84 students. Despite her disability, Judy always attended schools with hearing students.

The role of athletics in her life



At the age of seven, Judy competed with her brothers in athletic activities, often winning. She started playing softball at the age of 12, becoming an expert pitcher and strong batter. She pitched and batted right-handed, although she writes with her left hand. In the 1960s, Judy’s fast-pitch softball team made it to the national amateur championships. In the 1970s, she went back to the nationals with a slow-pitch team.

Judy served as the night sports editor for the *Daily Illini* (her college newspaper) when she attended the University of Illinois. She remembers discussing the coverage of women’s sports with the chief sports editor, Roger Ebert, who is now nationally known as a movie critic.

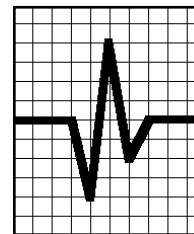
What degrees did Pachciarz earn?

As a child, Judy enjoyed reading about heroic women. Her mother gave her a book about

Elizabeth Blackwell, the first woman in America to become a doctor. Judy decided to become a doctor as a result of reading this book. Judy's determination and interest in learning helped her to earn an undergraduate and master's degrees in microbiology from the University of Illinois by 1965. She went on to earn her doctorate in microbiology at St. Louis University in 1971, and she completed her medical degree at the University of Louisville in 1983. She is a board-certified anatomic and clinical pathologist. As a pathologist, Dr. Pachciarz studies how organs, tissues, and cells change in persons who have various diseases.

Compensating for her deafness

When Dr. Judy was in college, she needed a stethoscope. The bioengineering staff of the university adapted an *oscilloscope* (an instrument that displays electrical variations as waves on a screen), so that she could see the sounds that she could not hear. Later, a smaller unit was developed that could take pictures and "freeze" the sound. These pictures could then be carefully examined for irregularities that would normally be missed. Dr. Judy used notes from other students to enhance the information she got from lectures at medical school.



Like any doctor, Dr. Pachciarz is often on call and needs to respond quickly to a medical emergency. She uses a beeper that vibrates and prints out the phone number she needs to call. Judy also uses a telecommunication device for the deaf (TDD), which is a portable machine that deaf people use to communicate by phone — first typing their outgoing messages and then receiving typed input that is displayed electronically in a small window on the TDD. Dr. Judy uses a part-time interpreter in her practice as well.

What barriers has Dr. Judy overcome in her pursuit of a scientific career?

When Dr. Pachciarz was in junior high school, she missed induction into the honor society due to a "D" that she earned in sewing class, while an "A" in workshop, then a boys-only course, was ignored. A teaching nun in the parochial high school that she attended tried to prevent Judy from taking chemistry. The nun claimed that Judy's deafness would somehow cause her to knock over the chemicals.

Dr. Pachciarz met resistance along her way to becoming a doctor also. In fact, she was rejected from more medical schools than was Elizabeth Blackwell, the first woman physician. When recalling the advice her advisors in school gave her, she said, "They didn't think it was possible at all. They'd say, 'You're deaf, you're a girl, and you want to be a doctor?'" She spent 17 years trying to gain entrance into medical school. Most of the schools did not bother to hide the fact that she was being rejected because she was deaf. She noted that medical school officials just assumed that she couldn't succeed at becoming a doctor. During her medical school interviews, she explained the technological advances that helped her compensate for her deafness, she brought pictures of her instruments, and she explained how she would succeed. She said, "They felt uncomfortable. They didn't want to say yes, but they had a hard time saying why not" (Corbet and Madorsky, 1991, p. 516).

A 17-year wait to enter medical school finally ended

During the time Dr. Pachciarz earned her Ph.D. and awaited entry into medical school, several key developments had occurred. The TDD was developed. Interpreters became available. Political awareness of disability issues grew, and section 504 of the Rehabilitation Act of 1973,

which prohibited discrimination against persons with disabilities at higher education institutions, began to be implemented.

Also, after 1977, Dr. Judy used interpreters whenever she went to a medical school interview (Corbet and Madorsky, 1991). She had attended all of her previous interviews without an interpreter, because she grew up believing that she could speak well enough to be understood. She talks now of how too many people were too kind and did not tell her that her speech was not understandable by the general public.

What advice does Dr. Pachciarz have?

Dr. Judy believes that college and medical school admissions personnel should not assume anything. She states,

Ask specific questions about how an applicant will handle things. Don't make the mistake of assuming that because someone is missing something, they don't have the ability to do something. Just ask the person how they would accomplish it. For example, ask a deaf person, "How would you evaluate heart and lung sounds?" That's a perfectly valid question. It's not acceptable not to ask that question. Ask how a person could do something. (Corbet and Madorsky, 1991, p. 517).

Students with disabilities may want to be prepared to raise these issues themselves. Dr. Judy advises young women and men to know what they want to be, trust in themselves, and use the crucible of doubt from others to forge their character.

We All Use Different Tools to Work, Play, and Communicate....



SUGGESTIONS FOR TEACHERS

ACTIVITY #1: The Case of the Unknown Tissue

Purpose

Students will learn to examine various kinds of organs and their tissues, and to identify an unknown kind of tissue.

Objectives

- 1) To observe and record data on various kinds of organs and their tissues from several animal sources.
- 2) To identify an unknown form of tissue based on observation and testing.
- 3) To differentiate among the various kinds of tissue found in living things.

Materials

For lab stations

Obtain any of the following tissues from a local butcher shop:

- sheep heart
- pig or cow brain
- pig or cow kidney
- pig or cow lung
- pig uterus
- cow tongue
- cow heart
- cow eye
- chicken legs
- chicken skin
- chicken liver

NOTE: You may want more than one of each tissue. Ideally, have one complete set of tissues per class period. If this isn't possible, encourage students not to mutilate any of the parts.

For each team

- rubber gloves (1 pair per student)
- 6-7 plates, trays, or other containers to hold the animal parts
- 12 tweezers
- 12 probes
- 12 scalpels
- 12 magnifying lenses
- 20 glass slides
- 20 cover slips
- 20 dropping pipettes
- microscopes

- paper plates or petri dishes
- reference books containing pictures that depict tissues, e.g. physiology books
- rulers
- mass scale

Optional

- dissecting microscope
- prepared tissue slides of each body part

Before You Begin

- 1) Plan on this investigation taking at least two class periods.
- 2) Call a local butcher two to three weeks prior to doing this activity to arrange to have tissues saved for you. Buy parts as close to the date of use as possible. If the butcher is unable to save the suggested parts listed above, ask what is possible to obtain and adjust the lesson accordingly.
- 3) Keep all parts refrigerated until the day of the lab. Return the parts to the refrigerator during breaks when the lab is not taking place.
- 4) Set up a station for each body part around the room. Each station should have a well-marked station number, dissecting tools, and a magnifying device.
- 5) Set up a station for students to observe unknown tissues. Use samples of tissue from the various organs or obtain additional organs with similar tissue types to use as the unknowns, such as steak (muscle tissue), chicken hearts, etc. Place the tissue samples on numbered paper plates, petri dishes, or other containers.
- 6) Set up a central station for students to prepare glass slides of tissue samples.
- 7) Collect resource materials, articles, and photographs of kinds of tissues, e.g. muscle, nerve, epithelial, and cardiac tissue.
- 8) Make copies of the "Station Data Chart" on page 76. Each student will need one worksheet for each station. Or have students make their own charts in their lab books.
- 9) Be sure students understand how important their written observations will be in

determining the unknown tissue.

- 10) During the class discussion, encourage each team to share a particular observation they made of each organ and its tissue. Use the “Questions to Ask” section below to aid the discussion.

Safety Considerations

- Ask the butcher to be sure the animal parts are disease free.
- Wipe surfaces with a 10% bleach solution before and after the lab.
- Students should wear rubber gloves when observing and working with specimens.
- The dissecting tools should be cleaned. Remind students about using tools safely.
- Students should wash hands upon completion of the lab.

Questions to Ask

- Does structure determine function? Does function determine structure?
- What are the differences in appearance among the organs and their tissues?
- What can you infer about the tissues’ functions based on observing their structure?
- If a particular tissue is damaged or diseased, how might its appearance change? What kinds of tests do you think doctors and scientists might do to check for abnormalities in the tissue?

Where to Go From Here

- Call a histology laboratory at a hospital or university to obtain more information.
- Compare and contrast other sorts of tissue from different kinds of animals, e.g., compare chicken heart with beef heart.
- Conduct research on tissue transplants. Determine what procedures are used to lessen the chance of tissue rejection.
- Dr. Pachciarz works extensively with the quality of Pap smears. Conduct research on various Pap smear techniques and issues related to the accuracy of laboratory tests.

Ideas for Assessment

- Have students create a concept map about tissues that depicts their current understanding of organs and tissues prior to beginning this activity. Once the investigation is complete, have students add to their

concept maps using a different color. Have them summarize the changes that occurred in their understanding about organs and tissues based on this investigation.

- Have students finalize their findings from each station and evaluate their papers using the following rubric as a guide:

	4	3	2	1	0
Quality of drawings:					
Detail of observations:					
Thoroughness, applicability of responses to questions:					
Technique and seriousness during lab:					

References and Resources

Allison, L. (1976). *Blood and Guts*. Boston: Little, Brown, and Company.

Corbet, B., & Madorsky, J. G. (1991). Physicians with disabilities. *Rehabilitation Medicine — Adding Life to Years (Special Issue), Western Journal of Medicine, 154*, p. 514-521.

Drexler, M. (March 1996). It’s almost cancer: What now? *McCall’s*, p. 76-78.

✓ *For science supplies:*
 Carolina Biological Supply Company, 2700 York Road, Burlington, NC 27215, (800) 334-5551.
 Fisher Scientific, Educational Division, 485 South Frontage Road, Burr Ridge, IL 60521, (800) 955-1177.
 Flinn Scientific, P.O. Box 219, Batavia, IL 60510, (630) 761-8518.
 WARD’S, 5100 West Henrietta Road, P.O. Box 92912, Rochester, NY 14692-9012, (800) 962-2660.

✓ *Photo credit:*

Photo on page 69 courtesy of the American Association for the Advancement of Science, Washington, DC.

Station Data Chart

Station #: _____

Observations
Looks like: <i>(do not state what you think it is...describe exactly what you see)</i>
Feels like:
Size/Mass:
Distinguishing parts/marks:
Sketch: <i>(include distinguishing marks)</i>
Appearance when magnified:
Possible function based on structure:

Organ

Tissue

ACTIVITY #1: The Case of the Unknown Tissue

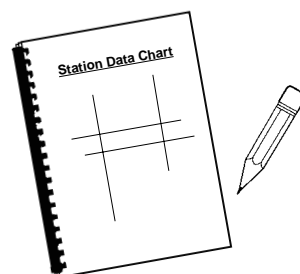
Your Mission

You are about to embark on an investigation of the various kinds of organs (and their tissues) found in birds and mammals.

Your mission is to observe each tissue carefully, predict the function of each tissue based on your observations, and be able to identify an unknown tissue when it is given to you. You may use reference materials to assist you during the first part of this activity.

Procedure – Part One

1. You will work in teams of three or four during this activity.
2. You will circulate around the room and visit each of the stations set up by your teacher. Each station has an organ for your team to examine. Each organ consists of a particular kind of tissue.
3. Use the tools at each station to help you make your observations of the whole organ and its tissue. Each person needs to complete his/her own “Station Data Charts.”



CAUTION: Be careful when using the dissecting tools. Wear gloves when handling tissues!

4. Complete a “Station Data Chart” for each of the stations. Remember to write in the station number at the top of each worksheet. Be thorough in your observations. You may want to observe the tissue under the microscope or with the magnifying lens.
5. Once you have visited each of the stations, you will present your findings in a discussion with the class.

Procedure – Part Two

1. After the discussion, you will be given an unknown kind of tissue. Your job is to examine it and identify it as a particular kind of tissue with a specific function. Complete the worksheet, “Analysis of the Unknown Tissue.”
2. Submit your final data and analysis to your teacher for assessment.



Analysis of the Unknown Tissue

1. Summarize your detailed observation of the unknown tissue.
2. Make a prediction: what type of tissue is your unknown tissue?
3. Provide three reasons why you made the prediction that you did.
4. List three questions you would research about your tissue if given the opportunity.
5. How does the structure of your tissue affect its function?
6. What have you gained by doing this investigation?
7. If you were Dr. Judy Pachciarz, how would you approach this investigation?

