Ear Glossary

Here are some vocabulary words for your study of the ear. The numbers inside the brackets indicate the numbered part on the model.

auditory canal: (ear canal) a tube that is open on one end and closed on the other. Air in the canal transmits sound waves to the eardrum. The ear canal also protects your ear. Small hairs near its opening help keep out dirt, dust, and even small insects. [2]

auditory nerve: carries messages from nerve fibers in the cochlea to the brain [31]

auricle: rubbery, ridged, and folded part of the ear that you can touch. The auricle catches sound waves as they travel through the air. [1,3,5-9]

cochlea: curled, fluid-filled tube in the inner ear. Hairs inside the cochlea pick up vibrations from the fluid and send the messages to nerve fibers. [26, 30]

eardrum: thin piece of skin that separates the outer ear from the middle ear. It receives vibrations from the ear canal. The eardrum amplifies the vibrations (makes them stronger) and transfers them to the middle ear. [10,11]

eustachian tube: tube that connects the middle ear cavity and the pharynx (back of the throat). Though it is normally closed, it can be opened by coughing or swallowing. This tube is necessary to relieve pressure in the middle ear cavity.

incus: (anvil) one of the three tiny bones—commonly known as the hammer, anvil, and stirrup—in the middle ear. The head of the incus picks up vibrations from the malleus (hammer), to which it is attached, and transfers them to the stapes (stirrup). [18,19]

inner ear: Part of the ear where hearing takes place. The job of the inner ear is to send sound “messages” to the brain to be interpreted. Another function of the inner ear is to give you a sense of balance, enabling you to walk, ride, a bike, or just sit upright. [24-30]

malleus: (hammer) largest of the three tiny bones—known as the hammer, anvil, and stirrup—in the middle ear. The malleus picks up vibrations from the eardrum to which it is attached on one end and transfers them to the incus (anvil) to which it is attached on the other end. [15-17]

middle ear cavity: enclosed space that contains the malleus, incus, and stapes (hammer, anvil, and stirrup). It is filled with air in order to help conduct sound from the eardrum, to the middle ear bones, and to the inner ear chamber. Air pressure is relieved through the eustachian tube. [12]

middle ear: small chamber behind the eardrum. The middle ear contains three tiny bones (hammer, anvil, and stirrup) and the oval window. Each of the bones acts as a lever to the next bone, increasing the pressure of the vibration and amplifying the sound as it is transferred from the outer ear to the inner ear. Special muscles in the middle ear work to protect us from very loud noises that might damage the inner ear. [10-23]

outer ear: consists of the auricle, auditory canal, and eardrum. The job of the outer ear is to collect sound waves, amplify them, and transmit them to the middle ear. [1-9]

oval window: a piece of skin that separates the middle ear from the inner ear [25]

semicircular canals: three loop-shaped tubes located inside the inner ear on top of the cochlea. The canals give you your sense of balance and have nothing to do with hearing. [27-29]
sound: caused when air particles (molecules) vibrate (move back and forth), bumping into other air molecules. These vibrations move in sound waves through the air in all directions. When they reach the ear, they produce sensations which we recognize as sound.

stapes: (stirrup) one of the three tiny bones—hammer, anvil, and stirrup—in the middle ear. The head of the stapes picks up vibrations from the incus (anvil) and transfers the sound through its “footplate” to the vestibule of the inner ear. The stapes is the tiniest bone in the body—smaller than a grain of rice. [20-23]

vestibule: chamber of the inner ear that leads to the cochlea and the semicircular canals [24]

vibrations: back-and-forth or up and down movements that repeat over and over again

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<table>
<thead>
<tr>
<th>Number on Model</th>
<th>Part of the Ear</th>
<th>Number on Model</th>
<th>Part of the Ear</th>
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<tbody>
<tr>
<td>1</td>
<td>auricle</td>
<td>18</td>
<td>incus (anvil) body</td>
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<tr>
<td>2</td>
<td>auditory canal</td>
<td>19</td>
<td>incus (anvil) long crus</td>
</tr>
<tr>
<td>3</td>
<td>helix (part of auricle)</td>
<td>20</td>
<td>stapes (stirrup) head</td>
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<td>4</td>
<td>connective tissue</td>
<td>21</td>
<td>stapes (stirrup) crus</td>
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<tr>
<td>5</td>
<td>antitragus (part of auricle)</td>
<td>22</td>
<td>stapes (stirrup) crus</td>
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<tr>
<td>6</td>
<td>triangular fossa (part of auricle)</td>
<td>23</td>
<td>stapes (stirrup) footplate</td>
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<tr>
<td>7</td>
<td>crest of the helix (part of auricle)</td>
<td>24</td>
<td>vestibule</td>
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<td>8</td>
<td>antihelix (part of auricle)</td>
<td>25</td>
<td>oval window</td>
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<tr>
<td>9</td>
<td>lobule (part of auricle)</td>
<td>26</td>
<td>cochlea</td>
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<tr>
<td>10</td>
<td>eardrum</td>
<td>27</td>
<td>superior semicircular canal</td>
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<td>11</td>
<td>lining of ear drum</td>
<td>28</td>
<td>lateral semicircular canal</td>
</tr>
<tr>
<td>12</td>
<td>middle ear cavity</td>
<td>29</td>
<td>posterior semicircular canal</td>
</tr>
<tr>
<td>13</td>
<td>ear muscle at stapes (stirrup)</td>
<td>30</td>
<td>cochlea</td>
</tr>
<tr>
<td>14</td>
<td>eustachian tube</td>
<td>31</td>
<td>auditory nerve</td>
</tr>
<tr>
<td>15</td>
<td>malleus (hammer) head</td>
<td>32</td>
<td>carotid artery</td>
</tr>
<tr>
<td>16</td>
<td>malleus (hammer) crus</td>
<td>33</td>
<td>carotid vein</td>
</tr>
<tr>
<td>17</td>
<td>malleus (hammer) handle</td>
<td>34</td>
<td>ear muscle in eustachian tube</td>
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Are Two Ears Better Than One?

To find out the answer to this question, perform the experiments below. Use the charts to record the results of your experiments.

**Experiment A**

Place a chair in a spot with plenty of room around it. Sit down on the chair and close your eyes tightly. Have a friend walk very quietly in a circle around the chair. As he walks around, have him lightly clap his hands together 10 different times. Each time you hear a sound, point your fingers in its direction. Have another friend use the chart below to keep a record of how often you were correct in determining the source of the sound.

<table>
<thead>
<tr>
<th>Sound</th>
<th>Was the source of the sound correctly identified?</th>
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</table>

**Experiment B**

Do the same experiment again, but cover one ear as tightly as you can. Once more have a friend keep tally of how often you were able to correctly determine the source of the sound.

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<th>Was the source of the sound correctly identified?</th>
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What conclusions can you draw from these experiments?
What’s Your Hearing I.Q.?

Write T if the statement is true. Write F if the statement is false.

1. _______ The outer ear consists of the hammer, anvil, and stirrup bones.
2. _______ Sounds are vibrations that move through the air and produce sensation in the ear.
3. _______ The eardrum separates the middle ear from the inner ear.
4. _______ Hearing really takes place in the inner ear.
5. _______ Sound vibrations moving through the ear are collected by the auricle.
6. _______ Sound waves travel in only one direction.
7. _______ The air in the ear canal transmits sound waves directly to the oval window.
8. _______ The middle ear protects us from very loud noises.
9. _______ The semicircular canals transmit sound waves to the cochlea.
10. _______ The brain is important to the sense of hearing.

Match the part of the ear with its job or description.

______ 11. auricle  A. curved, fluid-filled tube in the inner ear
______ 12. incus       B. the tiniest bone in the body
______ 13. auditory nerve  C. thin piece of skin that separates outer ear from middle ear
______ 14. cochlea    D. collects sound waves as they travel through the air
______ 15. ear canal E. tiny middle ear bone that picks up vibrations from the malleus
______ 16. eardrum    F. a piece of skin that separates the middle ear from the inner ear
______ 17. malleus     G. protects your ear and transmits sound waves to the eardrum
______ 18. middle ear H. the largest of the tiny bones in the middle ear; picks up vibrations from the eardrum
______ 19. oval window I. the small cavity behind the eardrum
______ 20. stapes     J. carries sound messages to the brain

Name ___________________________________________ Date ____________________________

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Ear Word Search

AUDITORY CANAL
COCHLEA
INCUS
MIDDLE EAR

SEMICIRCULAR CANAL
VESTIBULE
AUDITORY NERVE
EARDRUM

INNER EAR
OUTER EAR
SOUND
VIBRATIONS
EUSTACHIAN TUBE

STAPES
AURICLE
MALLEUS
OVAL WINDOW

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El-5405 Human Body: The Middle Ear
Answer Sheet

Ear Word Search

L L X T E B L H K H M J J U S K C S D W A T F L
OW D Z I E B R N N O B Q L I I O P U E X FL H
B X J R A E E L D D I M R Y K J Z J U G M R B N
N L I X P V N I R I D T Y R X V E Y Q U D N U D
U A C H F A N T W W L Q C G G Y I V U P E U C S
B Q S E M I C I R C U L A R C A N A L I N T C Q U
Y H T C O C H L E A T Y C U V P P A U D J A D C
R B U Z O N U O S Q H C N V F E W I C X J U N
C F M X T Y B V O F U L V A L P I S S E C B B U
M L W D S I D U E L C I R U A V M X Z Q R A C W
A U D I T O R Y C A N A L I R L G O P F T L K J Q
C O K U N X H P H B M Q Y A X Q O T F F G H P B
N L O R H E U S T A C I A N T U B E D Q P G P Z
M C D A T S M I M X I U L Q H M X M Z D R N N X
F L U A U D I T O R Y N E R V E Q W F Z H Z Y P
Q V L E Y E L I N N E R E A R V W L I G D T Z O
P Y P X I H P X B J M Y R F G H F F S U U U S
H E T X O D J S K M K Z D C U Q C M M R T E T
Z I Y T U S X L W O D N I W L A V O V E G X A
Q H S Y R S H A M C J F Y K K V L D R J R D P
I V R B E C R K G U Y E K F W F K A X N N F F S
O A O N B V E S T I B U L E L D Q I M Q W C E
E K Q D W V I B R A T I O N S I K T J M W C F S

What’s Your Hearing IQ?

1. F 11. D
2. T 12. E
3. F 13. J
4. T 14. A
5. T 15. G
6. F 16. C
7. F 17. H
8. T 18. I
10. T 20. B