

# PIG HEART DISSECTION LAB

## ANSWER KEY

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**How can you tell which side of the pig's heart is the ventral surface?** Place the heart in the dissecting pan so that the front or ventral side is towards you (the major blood vessels are on the top and the apex is down). The front of the heart is recognized by a groove that extends from the right side of the broad end of the heart diagonally to a point above & to your left of the apex.

**Why is pig heart used to study the anatomy of the human heart?** Pig hearts are a great way to get an idea of the anatomy of human hearts because they are very similar in size, structure, and function. Like human hearts, pig hearts consist of four chambers (two atriums and two ventricles).

**How can you tell which side of the heart is the ventral surface?** The dorsal side of the heart is the backside which is located near the body of the vertebrae. The ventral side is the front side facing the chest. the ventral surface is made up of the right ventricle, which faces forward towards the exterior sternum.

**Why are pig cow and sheep hearts used to study the anatomy of a human heart?** While dissecting, students can also explore how blood is pumped through the heart. Preserved sheep and pig hearts, while smaller and larger respectively, are similar in structure and function to the human heart, making this dissection great for many labs—from basic biology to human anatomy courses.

**How to distinguish between the ventral and dorsal surfaces of the heart?** The backside of the heart is known as the dorsal side, while the front side towards the chest is called the ventral side. The dorsal surface of the heart lies near the body of the vertebrae, while the ventral surface is constituted with the right ventricle, that

faces forward towards the exterior sternum.

**How can you tell which side of the heart is the ventral surface quizlet?** How can you tell which side of the heart is the ventral surface? The direction of the coronary arteries. The ventral side is diagonal.

**What are the characteristics of a pig's heart?** The porcine organ had a classic 'Valentine heart' shape, reflecting its location within the thorax and to the orientation of the pig's body (unguligrade stance). The human heart, in contrast, was trapezoidal in silhouette, reflecting man's orthograde posture.

**How many chambers does a pig's heart have?** Pigs like other mammals have a four-chambered heart. The right side of the heart pumps blood to the lungs (pulmonary circulation), and the left side pumps blood out to the rest of the body (systemic circulation).

**What is the color of a pig's heart?** Pig's heart, without pericardium. Conical shape with grooves – firm consistency – matt maroon colour.

**How can you tell the dorsal from the ventral side?** The main difference between dorsal and ventral is the area of the body to which they refer. In general, ventral refers to the front of the body, and dorsal refers to the back. These terms are also known as anterior and posterior, respectively.

**How can you tell which side of the heart is anterior and posterior?** How can you tell which side of the heart is the anterior surface and which side is the posterior surface? The anterior is the side that the apex is pointing to. The posterior surface lies opposite to the apex.

**Which side of the body is the heart on dorsal or ventral?** In nonchordates, heart is present on dorsal side of the body whereas in chordates heart is present on ventral side of the body.

**Why pig heart is used to study the human heart?** Pig hearts are used to study the anatomy of human hearts because they are very similar in structure, size and function to human hearts. These similarities, combined with the fact that they are much more readily available than human hearts, make them an ideal choice for research and study.

**Why are pig hearts used to study the anatomy of the human heart quizlet?** Pig hearts are commonly used as a substitute for human hearts in studying anatomy because of their. There are times when human hearts are not available, and the cost of preserving them is too expensive. The relatively easier access to pig hearts is useful for education, research, and the medical industry.

**How did they use a pig heart for human transplant?** The first xenotransplant into a living person was in 2022, when 57-year-old David Bennett received a pig heart and survived for 60 days after the procedure. A second man, Lawrence Faucette, received a pig heart in 2023 and survived for 40 days.

**What side of the pig is ventral?** Toward the front/belly: for the pig, ventral is used; for humans, anterior may also be used.

**What is the ventral view of the heart?** The ventral view or ventral side of the heart includes the superior vena cava, inferior vena cava, aorta, right ventricle, left ventricle, pulmonary artery, and the coronary artery. When the right auricle relaxes, deoxygenated blood from the superior and inferior vena cava pour into the right ventricle.

**Which side of the body is the heart on dorsal or ventral?** In nonchordates, heart is present on dorsal side of the body whereas in chordates heart is present on ventral side of the body.

**What is the ventral part of the heart?** The ventricles are the two lower chambers of the heart, one on the right and one on the left. The ventricles receive blood from the heart's upper chambers (atria) and pump it to the rest of the body. The right ventricle pumps blood to the lungs, and the left ventricle pumps blood to the rest of the body.

## **The Upside of Down: Why Failing Well is Key to Success**

By Megan McArdle

Failure is often seen as a negative, something to be avoided at all costs. However, research shows that failing well can actually be key to success. In her book, "The Upside of Down," author Megan McArdle argues that failure is an essential part of the learning process and that it can help us develop the resilience, creativity, and

problem-solving skills necessary for success.

**Q: Why do we tend to avoid failure?**

**A:** We avoid failure because it can be painful and embarrassing. It can also damage our self-esteem and make us feel like we are not good enough. Our societal pressure to succeed can make us even more averse to failure.

**Q: What are the benefits of failing?**

**A:** Failing can help us learn from our mistakes, develop resilience, and become more creative. It can also help us to become more humble and to appreciate the value of success. Research has shown that people who have failed are more likely to be successful in the long run than those who have never failed.

**Q: How can we fail well?**

**A:** To fail well, it is important to:

- Be honest with ourselves about what went wrong.
- Learn from our mistakes and make changes so that we do not repeat them in the future.
- Seek support from others who have failed and can offer advice.
- Maintain a positive attitude and do not give up on our goals.

**Q: Why is failing well key to success?**

**A:** Failing well is key to success because it helps us to develop the resilience, creativity, and problem-solving skills necessary to overcome challenges and achieve our goals. It also helps us to become more humble and to appreciate the value of success. People who have failed well are more likely to be successful in the long run than those who have never failed.

**Q: What is the takeaway message?**

**A:** The takeaway message is that failure is not something to be feared. It is an essential part of the learning process and can actually help us to achieve success. By embracing failure, we can become more resilient, creative, and successful.

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## **Solutions for Molecular Biology 5th Edition Weaver**

Molecular Biology, 5th Edition by Robert Weaver is a comprehensive textbook that covers the fundamental concepts and techniques of molecular biology. It is an invaluable resource for students and researchers alike, providing a detailed examination of the subject matter. To assist with understanding, the book offers supplementary materials, including solutions to end-of-chapter questions.

**Question 1:** What is the structure and function of a plasmid?

**Answer:** A plasmid is a small, circular, double-stranded DNA molecule that is found in bacteria. Plasmids are not essential for bacterial growth, but they can confer certain advantages to the host cell, such as antibiotic resistance or the ability to metabolize new compounds. Plasmids consist of a few thousand base pairs and typically contain a few genes.

**Question 2:** Explain the principle of polymerase chain reaction (PCR).

**Answer:** PCR is a technique that allows for the amplification of specific DNA sequences. It involves repeated cycles of heating and cooling, which cause the DNA to denature and anneal to complementary primers. A DNA polymerase then extends the primers, creating new copies of the target sequence. PCR can amplify DNA sequences millions of times, making it a powerful tool for a variety of applications, including DNA fingerprinting, genetic diagnosis, and DNA cloning.

**Question 3:** Describe the process of gel electrophoresis.

**Answer:** Gel electrophoresis is a technique used to separate DNA fragments based on their size. A DNA sample is loaded onto a gel made of agarose or polyacrylamide, and an electric current is applied to the gel. The negatively charged DNA fragments migrate towards the positive electrode, and the smaller fragments move faster than the larger fragments. Gel electrophoresis allows researchers to determine the size and quantity of DNA fragments and to separate different DNA samples.

**Question 4:** Explain the role of restriction enzymes in molecular biology.

**Answer:** Restriction enzymes are enzymes that recognize and cut DNA at specific sequences. They are used in a variety of molecular biology techniques, including gene cloning, DNA fingerprinting, and genome mapping. Restriction enzymes can cut DNA into specific fragments that can then be manipulated or analyzed.

**Question 5:** Describe the application of recombinant DNA technology in medicine.

**Answer:** Recombinant DNA technology allows scientists to manipulate and combine DNA from different sources. This technology has numerous applications in medicine, including the production of therapeutic proteins, such as insulin and growth hormones. It is also used in gene therapy, where specific genes are introduced into cells to treat genetic diseases. Additionally, recombinant DNA technology is used to develop diagnostic tests and create genetically modified organisms for biomedical research.

### **Tobira: Gateway to Advanced Japanese Learning Through Content and Multimedia**

**Introduction** Tobira is a comprehensive Japanese language learning textbook series designed to bridge the gap between intermediate and advanced proficiency. It utilizes a unique blend of content-based learning and multimedia resources to engage students and facilitate a deeper understanding of Japanese language and culture.

**Q: What are the key features of Tobira? A:** Tobira features authentic Japanese materials, such as newspaper articles, essays, and interviews, to immerse students in real-world language use. It also incorporates interactive exercises, audio recordings, and videos to enhance comprehension, pronunciation, and cultural knowledge.

**Q: How is grammar introduced in Tobira? A:** Grammar is presented through authentic texts and interactive practice exercises. Students are exposed to both common and advanced grammatical structures, and are encouraged to use them in context while developing their fluency.

**Q: What role does multimedia play in Tobira? A:** Multimedia is an integral part of Tobira's learning experience. Audio recordings provide native pronunciation models,

videos offer cultural insights, and online exercises allow students to self-assess their progress. These resources supplement the printed materials and create a more engaging learning environment.

**Q: What is the target audience for Tobira? A:** Tobira is suitable for intermediate Japanese language learners who wish to advance their skills to an advanced level. It is commonly used in university language programs and by self-directed learners seeking a comprehensive and engaging Japanese learning experience.

**Conclusion** Tobira: Gateway to Advanced Japanese Learning Through Content and Multimedia is an innovative textbook series that combines authentic materials, interactive exercises, and multimedia resources to create a comprehensive and engaging learning experience. Through its immersive content and focus on grammar and fluency, Tobira effectively prepares students for advanced Japanese proficiency.

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