

# Structure and Movement

	Beginning	Intermediate	Advanced
1	Learn how to tell if a dog is walking, trotting, or running. Record observations about how your dog moves and when he moves at different gaits.	Review information on this website and compare and contrast the dogs on the website to your dog. <a href="http://heathercaprette.info/COTA_741_sp04/CanineLO_090504.html">heathercaprette.info/COTA_741_sp04/CanineLO_090504.html</a>	Use these websites to learn about normal and abnormal dog motion. Visit a location where you can watch a lot of dogs moving and make notes about what you observe. <ul style="list-style-type: none"> <li>• <a href="http://cal.vet.upenn.edu/projects/saortho/appendix_b/appb.htm">cal.vet.upenn.edu/projects/saortho/appendix_b/appb.htm</a></li> <li>• <a href="http://heathercaprette.info/COTA_741_sp04/CanineLO_090504.html">heathercaprette.info/COTA_741_sp04/CanineLO_090504.html</a></li> <li>• <a href="http://vanat.cvm.umn.edu/gaits/">vanat.cvm.umn.edu/gaits/</a></li> </ul>
2	Create an ethogram and spend a total of at least an hour recording what behavior you observe in your dog(s).	Create an ethogram and spend a total of at least 2 hours recording what behavior you observe in your dog(s).	Create an ethogram and spend a total of at least 3 hours recording what behavior you observe in your dog(s).
3	Use your <i>Dog Resource Handbook</i> to evaluate your dog's structure. Take photos of your dog and label your observations.	Use your <i>Dog Resource Handbook</i> to evaluate your dog's structure. Take photos of your dog and label your observations. Repeat this with 2 other dogs.	Use your <i>Dog Resource Handbook</i> and additional resources to evaluate your dog's structure. Take photos of your dog and label your observations. Repeat this with 4 other dogs.
4	Use the activity and chart on this website to learn the skeletal system of the dog. Next, compare the parts you learned with the parts of the skeletal system found in your <i>Dog Resource Handbook</i> . Learn the additional parts found in the <i>Dog Resource Handbook</i> . <a href="http://glencoe.com/sec/science/lep_science/lep2002/lb/life/wwwlinksD/interactivities.php?iRef=421&amp;iChapter=1&amp;iUnitNumber=4&amp;iUnit=1405&amp;iArticle=421">glencoe.com/sec/science/lep_science/lep2002/lb/life/wwwlinksD/interactivities.php?iRef=421&amp;iChapter=1&amp;iUnitNumber=4&amp;iUnit=1405&amp;iArticle=421</a>	Review this game about the human skeletal system: <a href="http://wisc-online.com/Objects/ViewObject.aspx?ID=mea304">wisc-online.com/Objects/ViewObject.aspx?ID=mea304</a> Look at this activity for the dog's skeletal system. <a href="http://vet.osu.edu/assets/flash/education/outreach/games/skeleton/skeleton.html">vet.osu.edu/assets/flash/education/outreach/games/skeleton/skeleton.html</a>	Review this game about the human skeletal system: <a href="http://wisc-online.com/Objects/ViewObject.aspx?ID=mea304">wisc-online.com/Objects/ViewObject.aspx?ID=mea304</a> And look at this activity for the dog's skeletal system. <a href="http://vet.osu.edu/assets/flash/education/outreach/games/skeleton/skeleton.html">vet.osu.edu/assets/flash/education/outreach/games/skeleton/skeleton.html</a> Compare and contrast the 2 systems and make a presentation on your findings.



# Structure and Movement, cont.



	Beginning	Intermediate	Advanced
<b>5</b>	<p>Make observations and structural evaluations of 3 dogs other than your own. Take photos of the dogs and label the conformation traits that you observe.</p>	<p>Find a breeder who is selecting dogs to participate in the breed ring (conformation) or sports. Interview the person about how puppies are evaluated for structure.</p>	<p>Find a breeder who is selecting dogs to participate in the breed ring (conformation) or sports. Interview the person about how puppies are evaluated for structure. Repeat this with a second breeder. List the similarities and differences of the breeders' interviews.</p>

# Systems

	Beginning	Intermediate	Advanced
1	Learn how to measure your dog's respiration. Take this measurement at different times of day. Repeat for 7 days. Record your findings.	Learn how to measure your dog's respiration. Take this measurement at different times of day. Repeat for 14 days. Record your findings.	Learn how to measure your dog's respiration. Take this measurement at different times of day. Repeat for 21 days. Record your findings.
2	Feed your dog pieces of carrot. Note the time you feed the carrots and note the time you see carrots exit your dog's system. A few days later, repeat the experiment but feed the carrots at a different time of day. Record the times the carrots enter and exit your dog. Calculate the number of hours or minutes that digestion took.	Feed your dog pieces of carrot. Note the time you feed the carrots and note the time you see carrots exit your dog's system. Repeat the experiment during periods of time where your dog digests in the day and at night. Calculate the number of hours or minutes that digestion took.	Feed your dog pieces of carrot. Note the time you feed the carrots and note the time you see carrots exit your dog's system. Repeat the experiment with periods of time where your dog digests in the day and at night and on 3 days with more or less activity. Calculate the number of hours or minutes that digestion took.
3	Research the nervous system and present the 10 most interesting facts to your friends or family. <a href="http://faculty.washington.edu/chudler/introb.html#hrh">faculty.washington.edu/chudler/introb.html#hrh</a> Learn about 2 nervous system disorders in dogs.	Research the nervous system and present the 10 most interesting facts to your friends or family. <a href="http://faculty.washington.edu/chudler/introb.html#hrh">faculty.washington.edu/chudler/introb.html#hrh</a> Learn about 3 nervous system disorders in dogs. Ask a veterinarian about how dogs are evaluated for nervous system disorders.	Research the nervous system and present the 15 most interesting facts to your friends or family. <a href="http://faculty.washington.edu/chudler/introb.html#hrh">faculty.washington.edu/chudler/introb.html#hrh</a> Learn about 5 nervous system disorders in dogs. Ask a veterinarian about how dogs are evaluated for nervous system disorders.
4	Learn about how muscles work and share the information with another dog owner. <a href="http://kidshealth.org/kid/htbw/muscles.html">kidshealth.org/kid/htbw/muscles.html</a> Identify 5 different muscles in dogs and show where they are on an illustration.	Learn about how muscles work and share the information with another dog owner. <a href="http://kidshealth.org/kid/htbw/muscles.html">kidshealth.org/kid/htbw/muscles.html</a> Identify 15 different muscles in dogs and show where they are on an illustration.	The link below lists 12 breeds of muscular dogs. After reading the information provided compare and contrast these breeds based on information researched about their musculature. <a href="http://dogguide.net/muscular-dogs.php">dogguide.net/muscular-dogs.php</a>





## Beginning

## Intermediate

## Advanced

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Learn about cells and draw diagrams of 2 types of cells that are found in people and dogs.

Learn about cells and draw diagrams of 5 types of cells that are found in people and dogs.

Learn about cells and draw diagrams of 8 types of cells that are found in people and dogs. Teach 1 other person about these cells.

# Genetics

	Beginning	Intermediate	Advanced
1	To learn genetics terminology, create a game to learn the terminology and their definitions. Learn at least 10 genetic terms. Discuss the meaning of each term with your project helpers.	Learn how to use a basic punnet square and teach someone else how to use it. <a href="http://exploringnature.org/db/detail.php?dbID=22&amp;detID=2290">exploringnature.org/db/detail.php?dbID=22&amp;detID=2290</a>	Read the information on these 2 websites and create 5 punnet squares with what you have learned. <ul style="list-style-type: none"> <li>• <a href="http://animalgenetics.us/ccalculator1.asp">animalgenetics.us/ccalculator1.asp</a></li> <li>• <a href="http://doggenetics.co.uk/">doggenetics.co.uk/</a></li> </ul>
2	Research common health problems in the breed or breed type of your dog. Find out if these conditions are genetic or why this breed or breed type has this problem. Can this problem be tested for or prevented?	Research common health problems in 4 breeds of dogs. Find out if these conditions are genetic or why these breeds have these problems. Can these problems be prevented?	Research common health problems in 8 breeds of dogs. Find out if these conditions are genetic or why these breeds have these problems. Can these problems be prevented?
3	With your project helper, find out the different types of testing available for mixed breed dogs to determine breed type(s). List these types of tests.	Research different types of testing available for mixed breed dogs to determine breed type(s). Make a chart to show similarities and differences. Look at how the tests are done, accuracy, how many breeds they can identify, accuracy, and cost.	Research and compare cheek swab and blood sample DNA/ breed profile tests. Share what you learned and the reliability of these tests with your 4-H club.
4	Create and decode a “DNA recipe” for dogs to observe how variations in DNA lead to the inheritance of different traits. <a href="http://learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf">learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf</a>	Create and decode 2 “DNA recipes” for dogs to observe how variations in DNA lead to the inheritance of different traits. <a href="http://learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf">learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf</a>	Create and decode a “DNA recipe” for dogs to observe how variations in DNA lead to the inheritance of different traits. Present this activity to your 4-H club. <a href="http://learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf">learn.genetics.utah.edu/content/basics/activities/pdfs/A%20Recipe%20for%20Traits_Public.pdf</a>
5	Play this game with your project helper and talk about what you have learned. <a href="http://pbskids.org/dragonflytv/games/game_dogbreeding.html">pbskids.org/dragonflytv/games/game_dogbreeding.html</a>	Play this game. Share what you learn with your project helper and why you get the results that you do. <a href="http://pbskids.org/dragonflytv/games/game_dogbreeding.html">pbskids.org/dragonflytv/games/game_dogbreeding.html</a>	Play this game. Write a summary about the experience and whether the game is a good introduction to genetics. Note if there are errors with the game. <a href="http://pbskids.org/dragonflytv/games/game_dogbreeding.html">pbskids.org/dragonflytv/games/game_dogbreeding.html</a>





	Beginning	Intermediate	Advanced
1	Visit a breeder or shelter that has a litter of puppies. Create a list of 10 questions to ask about the care and needs of young puppies. Ask the breeder or shelter staff person these questions. Record your answers.	Visit a breeder or shelter with a litter of puppies. Learn about the behavior needs of young puppies and what type of behavior is abnormal in young puppies.	Visit a breeder or shelter with a litter of puppies. Observe the behavior of the puppies at 2 different points, at least 10 days apart. Record what types of behaviors you observe and how frequently the puppies display those behaviors.
2	Talk to 2 different dog people (owners, breeders, veterinarians) about pros and cons of spaying and neutering. List your findings.	Talk to 5 different dog people (owners, breeders, veterinarians) about pros and cons of spaying and neutering. List your findings.	Watch a spay or neuter at a veterinary clinic or spay/neuter clinic.
3	Talk to a breeder, feed dealer, or veterinarian about the nutritional needs of pregnant and lactating dogs. Compare and contrast the information.	Talk to 2 of the following: a breeder, feed dealer, <u>or</u> veterinarian about the feeding needs of pregnant and lactating dogs. Compare and contrast the information.	Talk to a breeder, feed dealer, <u>and</u> veterinarian about the feeding needs of pregnant and lactating dogs. Compare and contrast the information.
4	Talk to a breeder about how s/he chooses sires and dams for a litter of puppies. Ask about behavior, health, structure, and personality.	Talk to 2 breeders about how they choose sires and dams for a litter of puppies. Ask about behavior, health, structure, and personality. What are similarities and differences in the choices? Why?	Read these articles: <ul style="list-style-type: none"> <li>• <a href="http://breedingbetterdogs.com/article/dna-sires-program-pt-1">http://breedingbetterdogs.com/article/dna-sires-program-pt-1</a></li> <li>• <a href="http://breedingbetterdogs.com/article/brackets-formula">http://breedingbetterdogs.com/article/brackets-formula</a></li> </ul> With your dog's breed or the breed your dog most resembles, find a male and female you think would make a good pairing and write a short summary.
5	Talk to someone breeding dogs for a specific purpose (service dogs, hunting, herding, etc.) and find out how dogs are selected for the breeding program. What types of traits are desirable? What traits are undesirable?	Talk to 2 people breeding dogs for a specific purpose (service dogs, hunting, herding, etc.) and find out how dogs are selected for the breeding program. What types of traits are desirable? What traits are undesirable?	Talk to 3 people breeding dogs for a specific purpose (service dogs, hunting, herding, etc.) and find out how dogs are selected for the breeding program. What types of traits are desirable? What traits are undesirable?

# Technology

	Beginning	Intermediate	Advanced
1	Research products that can be used to keep dogs cool in warm weather.	Research products that can be used to keep dogs warm in cool weather.	Shadow or visit a veterinarian or arrange a time to learn how ultrasound works and when ultrasounds are used.
2	Talk to your veterinarian or a shelter worker about what a microchip is and how microchips work. Learn to scan a dog for a microchip.	Talk to your veterinarian or a shelter worker about what a microchip is and how microchips work. Learn to scan a dog for a microchip. Watch a microchip be inserted in a dog.	Talk to a veterinarian or doctor about cold laser therapy. Record what you learned.
3	GPS units are sometimes kept on hunting dogs to find them while working and are used by search and rescue handlers. Learn about GPS and how it works.	GPS units are sometimes kept on hunting dogs to find them while working and are used by search and rescue handlers. Learn about GPS and how it works. Set up an activity for your club to learn about GPS technology.	Compare the pros and cons of as many different types of tracking devices you can find that are used on dogs. Talk with a dog owner that uses a tracking device to learn how to use one and how his/her dog responds.
4	Research 2 types of technology that can be used to work with your dog, to learn more about dogs, etc. Here are 2 websites to get you started: <a href="http://fitbark.com">fitbark.com</a> <a href="http://dognition.com/">dognition.com/</a>	Research 4 types of technology that can be used to work with your dog, to learn more about dogs, etc. Here are 2 websites to get you started: <a href="http://fitbark.com">fitbark.com</a> <a href="http://dognition.com/">dognition.com/</a>	Research the advancements of technology in veterinary medicine, including how veterinarians and doctors work together to advance human and animal health. Get started by using this website: <a href="http://aahanet.org/blog/petsmatter/post/2014/09/18/938259/Science-fiction-or-reality-Technological-advancements-in-pet-health-care.aspx">aahanet.org/blog/petsmatter/post/2014/09/18/938259/Science-fiction-or-reality-Technological-advancements-in-pet-health-care.aspx</a>
5	Visit a veterinarian to find out about his or her favorite technology.	Visit a veterinarian to find out about his or her favorite technology. Learn how that technology is used in his/her practice. Explain this to your project helper.	Talk to a veterinarian about new medications available and the types of technology that have allowed for the product(s) to be created.

