

## Brain Camp Online Part II– Neuroanatomy

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**Content Launch Date:** Monday, August 2, 2021  
**Live Q&A with the Presenters:** Wednesday, August 25, 2021, 2:00 pm PDT / 4:00 pm CDT / 5:00 pm EDT

This 6-hour course will cover the functional neuroanatomy of the quadrupedal nervous system, by giving an overview of regional anatomy and blood supply and exploring the neuroanatomy of the neurological examination (structure and function).

All topics will be presented in 50 – 60 minute pre-recorded sessions.

Neuroanatomy	
Topic / Description and Learning Objectives	Presenter
<p><b>Module 1: Regional and Functional Neuroanatomy of the Nervous System</b></p> <p>This session will provide an overview of the functional neuroanatomy for the different regions of the nervous system.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• Define the functional divisions of the nervous system.</li> <li>• Outline the structure of the spinal cord, its functional layout (dorsoventral and craniocaudal) and state the location of the main spinal cord tracts.</li> <li>• State the key structures (grey and white matter) of the three functional divisions of the brain.</li> <li>• Extrapolate to the signs of dysfunction that could occur with lesions in the different divisions.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>
<p><b>Module 2: Ventricular System and Vascular Supply</b></p> <p>This session will provide an overview of the ventricular system, its structure and function, and the vascular supply and drainage of the nervous system.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• Identify the different components of the ventricular system and use them to aid in determining the location of brain sections on imaging.</li> <li>• Describe the CSF pathway from production to drainage.</li> <li>• State arterial territories in the brain and spinal cord and be able to identify which vessels must be occluded to cause infarction in a particular region.</li> <li>• Recognize major blood vessels on brain images.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>

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<p><b>Module 3: Posture, Gait and Sensory Systems</b>            This session will provide an overview of the neurological examination. It will outline the neuroanatomy of mentation/arousal. We will start discussing the functional neuroanatomy of posture and gait, beginning with sensory systems. This will include proprioception, autonomous zones, nociception and pain.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• State the core components of the neurological examination.</li> <li>• Define core components of the limbic system and functional neuroanatomy of the ARAS.</li> <li>• Describe the functional neuroanatomy of proprioception (conscious, subconscious and general) and the effect of lesions on an animal's proprioception.</li> <li>• Differentiate nociception from pain and outline the functional neuroanatomy of these systems.</li> <li>• State the location of nociceptors that can result in spinal hyperpathia.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>
<p><b>Module 4: Motor Systems</b>            This session will provide information about the motor unit, spinal reflexes, UMN and LMN, brain motor centers and cerebellar function.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• Differentiate UMN and LMN structurally and functionally, and in neurological disease.</li> <li>• Define a reflex and state how reflexes and central pattern generators are used in locomotion.</li> <li>• Discuss the roles of the extrapyramidal and pyramidal systems in quadrupedal motor function.</li> <li>• Outline cerebellar functional anatomy and its role in gait and posture.</li> <li>• Extrapolate to the signs of dysfunction that could occur with lesions in different motor components.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>

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<p><b>Module 5: Cranial Nerves</b>            This session will provide information on the functional anatomy of the cranial nerves with reference to their identification by MRI.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• State the names, location and function of the cranial nerves and their nuclei, and which cranial nerves work together to permit various functions.</li> <li>• Extrapolate to signs of cranial nerve dysfunction caused by lesions affecting individual nerves or specific regions of the brain.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>
<p><b>Module 6: Visceral Nervous System</b>            This session will provide information on the functional anatomy of the visceral nervous system including afferent and efferent (autonomic) components. We will cover the autonomic innervation of the eyes and continence. Tables summarizing brain and spinal cord function and dysfunction will be provided.</p> <p>Upon completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• State the functional neuroanatomy of the afferent, efferent and central portions of the visceral nervous system.</li> </ul> <p>Eye:</p> <ul style="list-style-type: none"> <li>• Describe/draw the autonomic innervation of the eye.</li> <li>• Explain the clinical signs observed in Horner syndrome.</li> <li>• Understand pharmacological testing of the eye.</li> </ul> <p>Urinary bladder:</p> <ul style="list-style-type: none"> <li>• Discuss the autonomic and somatic innervation of the urinary bladder.</li> <li>• Describe its function during storage and voiding.</li> <li>• Differentiate UMN from LMN bladder and understand principles of pharmacological treatment.</li> </ul>	<p>Christine Thomson, BVSc (Hons), PhD, DACVIM (Neurology), DECVN</p>