DOWNLOAD PDF NERVOUS GENERATION

Chapter 1 : The Nervous Generation: American Thought topBooks tags:8r8ux2q

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The growth of these axons is also governed by chemotactic factors secreted from Schwann cells. Injury to the peripheral nervous system immediately elicits the migration of phagocytes , Schwann cells, and macrophages to the lesion site in order to clear away debris such as damaged tissue which is inhibitory to regeneration. When a nerve axon is severed, the end still attached to the cell body is labeled the proximal segment, while the other end is called the distal segment. After injury, the proximal end swells and experiences some retrograde degeneration, but once the debris is cleared, it begins to sprout axons and the presence of growth cones can be detected. The proximal axons are able to regrow as long as the cell body is intact, and they have made contact with the Schwann cells in the endoneurial channel or tube. In the later stages of regeneration the remaining endoneurial tube directs axon growth back to the correct targets. Also, macrophages and Schwann cells release neurotrophic factors that enhance re-growth. Central nervous system regeneration[edit] Unlike peripheral nervous system injury, injury to the central nervous system is not followed by extensive regeneration. It is limited by the inhibitory influences of the glial and extracellular environment. The hostile, non-permissive growth environment is, in part, created by the migration of myelin-associated inhibitors, astrocytes, oligodendrocytes, oligodendrocyte precursors, and microglia. The environment within the CNS, especially following trauma, counteracts the repair of myelin and neurons. Growth factors are not expressed or re-expressed; for instance, the extracellular matrix is lacking laminins. Glial scars rapidly form, and the glia actually produce factors that inhibit remyelination and axon repair; for instance, NOGO and NI Slower degeneration of the distal segment than that which occurs in the peripheral nervous system also contributes to the inhibitory environment because inhibitory myelin and axonal debris are not cleared away as quickly. All these factors contribute to the formation of what is known as a glial scar , which axons cannot grow across. The proximal segment attempts to regenerate after injury, but its growth is hindered by the environment. It is important to note that central nervous system axons have been proven to regrow in permissive environments; therefore, the primary problem to central nervous system axonal regeneration is crossing or eliminating the inhibitory lesion site. In the central nervous system, this glial scar formation significantly inhibits nerve regeneration, which leads to a loss of function. Several families of molecules are released that promote and drive glial scar formation. For instance, transforming growth factors B-1 and -2, interleukins, and cytokines play a role in the initiation of scar formation. The accumulation of reactive astrocytes at the site of injury and the up regulation of molecules that are inhibitory for neurite outgrowth contribute to the failure of neuroregeneration. This scar formation involves several cell types and families of molecules. Chondroitin sulfate proteoglycan[edit] In response to scar-inducing factors, astrocytes up regulate the production of chondroitin sulfate proteoglycans. Astrocytes are a predominant type of glial cell in the central nervous system that provide many functions including damage mitigation, repair, and glial scar formation. CS-GAGs had not been studied until recently. Keratan sulfate proteoglycans[edit] Like the chondroitin sulfate proteoglycans, keratan sulfate proteoglycan KSPG production is up regulated in reactive astrocytes as part of glial scar formation. KSPGs have also been shown to inhibit neurite outgrowth extension, limiting nerve regeneration. Keratan sulfate , also called keratosulfate, is formed from repeating disaccharide galactose units and N-acetylglucosamines. It is also 6-sulfated. This sulfation is crucial to the elongation of the keratan sulfate chain. A study was done using N-acetylglucosamine 6-O-sulfotransferase-1 deficient mice. The wild type mouse showed a significant up regulation of mRNA expressing N-acetylglucosamine 6-O-sulfotransferase-1 at the site of cortical injury. However, in the N-acetylglucosamine 6-O-sulfotransferase-1 deficient mice, the expression of keratan sulfate was significantly decreased when compared to the wild type mice. Similarly, glial scar formation was significantly reduced in the N-acetylglucosamine 6-O-sulfotransferase-1 mice, and as a result, nerve regeneration was less inhibited. Antagonising this inhibitor results in improved remyelination, as it is involved in the RhoA pathway. This is called peripheral nerve reconstruction. The injured nerve is

identified and exposed so that normal nerve tissue can be examined above and below the level of injury, usually with magnification, using either loupes or an operating microscope. If a large segment of nerve is harmed, as can happen in a crush or stretch injury, the nerve will need to be exposed over a larger area. Injured portions of the nerve are removed. The cut nerve endings are then carefully reapproximated using very small sutures. The nerve repair must be covered by healthy tissue, which can be as simple as closing the skin or it can require moving skin or muscle to provide healthy padded coverage over the nerve. A surgical tourniquet is almost always used. Recovery of a nerve after surgical repair depends mainly on the age of the patient. Young children can recover close-to-normal nerve function. Sharp injuries, such as a knife wound, damage only a very short segment of the nerve, availing for direct suture. In contrast, nerves that are divided by stretch or crush may be damaged over long segments. These nerve injuries are more difficult to treat and generally have a poorer outcome. In addition, associated injuries, like injury to bone, muscle and skin, can make nerve recovery more difficult. After a nerve is repaired, the regenerating nerve endings must grow all the way to their target. For example, a nerve injured at the wrist that normally provides sensation to the thumb must grow to the end of the thumb in order to provide sensation. The return of function decreases with increased distance over which a nerve must grow. It is important that nerves are not repaired under tension, [15] which could otherwise happen if cut ends are reapproximated across a gap. Nerve segments are taken from another part of the body the donor site and inserted into the lesion to provide endoneurial tubes for axonal regeneration across the gap. However, this is not a perfect treatment; often the final outcome is only limited function recovery. Also, partial deinnervation is frequently experienced at the donor site, and multiple surgeries are required to harvest the tissue and implant it. When appropriate, a nearby donor may be used to supply innervation to lesioned nerves. Trauma to the donor can be minimized by utilizing a technique known as end-to-side repair. In this procedure, an epineurial window is created in the donor nerve and the proximal stump of the lesioned nerve is sutured over the window. Regenerating axons are redirected into the stump. Efficacy of this technique is partially dependent upon the degree of partial neurectomy performed on the donor, with increasing degrees of neurectomy giving rise to increasing axon regeneration within the lesioned nerve, but with the consequence of increasing deficit to the donor. Allografts and xenografts[edit] Variations on the nerve autograft include the allograft and the xenograft. In allografts, the tissue for the graft is taken from another person, the donor, and implanted in the recipient. Xenografts involve taking donor tissue from another species. Allografts and xenografts have the same disadvantages as autografts, but in addition, tissue rejection from immune responses must also be taken into account. Often immunosuppression is required with these grafts. Disease transmission also becomes a factor when introducing tissue from another person or animal. Overall, allografts and xenografts do not match the quality of outcomes seen with autografts, but they are necessary when there is a lack of autologous nerve tissue. Nerve guidance conduit[edit] Because of the limited functionality received from autografts, the current gold standard for nerve regeneration and repair, recent neural tissue engineering research has focused on the development of bioartificial nerve guidance conduits in order to guide axonal regrowth. The creation of artificial nerve conduits is also known as entubulation because the nerve ends and intervening gap are enclosed within a tube composed of biological or synthetic materials. Possible strategies include vaccination against these proteins active immunisation , or treatment with previously created antibodies passive immunisation. These strategies appear promising on animal models with experimental autoimmune encephalomyelitis EAE , a model of MS.

Chapter 2 : The Nervous Generation : Roderick Nash :

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Tell us in 3 emojis or less. Actually, not only do we take less vacation time than any other generation, we work longer hours more millennials work 50 hour work weeks than any other generation â€" and most interestingly, we are the only generation in which the majority actually wants others to see us as workaholics. Now major companies like Google build bunk rooms and laundries into the office so that workers can work long grueling overtime hours and pass out at work instead of going home. Then of course comes the accusation of being weak. Our phones are constant reminders of deadlines, social gatherings, office parties, office drama, bank account balances, student debt, Visa bills, emails, clocks and timers, news headlines, weather reports and texts from unwanted old high school friends. Not to mention that for the first time our social metric of popularity has actually been boiled down to a number. The lower the likes, the less attractive. A study by Baylor University found that American students spend nine hours on their phone every day! No, instead we have the constant lingering threat of total annihilation via global warming or resource scarcity. Does that make you anxious? It makes me anxious. What do we do to kill the anxiety that our phones cause? We sit down and watch four episodes of our favorite television show â€" but both staying up late and watching television for more than two hours have statistically been shown to cause more anxiety. In fact, research done by BMC Public Health showed that sitting down all day causes anxiety and depression. On top of that, there are countless studies that show that social media can cause serious depression and anxiety. You guys texting a lot? We are officially having less sex than any generation before us â€" right up to the generation before the boomers. Young millennials are twice as likely to be sexually inactive as Gen Xers were. So we take anti-depressants â€" and make no mistake, we are the most medicated generation in history. Millennial antidepressant use has doubled from to Of course one of the major side effects of antidepressants are a reduced sex drive and an inability to achieve orgasm. Antidepressants are fundamentally designed for adults. A young man taking Zoloft might tell you that the drug made him feel like himself â€" made him feel like the person he was before he got clinically depressed. A young teen on Zoloft is going to have a warped sense of identity. Instead of seeing antidepressants as a means to regain their previous self, they see antidepressants as themselves. They are raised as people who have to take pills every day. But hey, we like to let loose too! We still do hardcore drugs, just like every previous generation â€" and what drugs are we taking? Well, the obvious ones: Adderall, for example, is one of the most abused drugs that we millennials take. You pop one and sit for six hours and write papers like your life depended on it. The next drugs on the list are all pill sized sedatives, tranquilizers and pain relievers â€" and sometimes we do cocaine. What am I trying to say? I have no solutions really. My cat is whipping his tail around. I wrote this so I have the information. What am I supposed to say? But what does that accomplish? We have a right to be nervous. These are crazy times. These are crazy, crazy times. We get to turn it off and on like a faucet. Having just two days without social media is utter bliss â€" and we all agree on that. But we all keep circling back. How well do you know your neighbours? How well do you know the people you buy food from at the grocery store twice a week? Can you name even one of the people in the service industry you see multiple times every week? When was the last time you had a conversation with a total stranger? How often do you talk to a complete stranger? How do you make friends? Where do you make friends? How often do you make friends? How often do you chat with members of the opposite sex in a meaningful way? Pop psychology has taught us that being sad all the time is just an illness that needs to be treated with meds â€" and sometimes it is.

Chapter 3 : Issue # The Nervous Generation: I Canâ€™t Even â€“ Awktober Magazine

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Efferent nerves in the PNS carry signals from the control center to the muscles, glands, and organs to regulate their functions. Nervous System Anatomy Nervous Tissue The majority of the nervous system is tissue made up of two classes of cells: Neurons Neurons, also known as nerve cells, communicate within the body by transmitting electrochemical signals. Neurons look quite different from other cells in the body due to the many long cellular processes that extend from their central cell body. The cell body is the roughly round part of a neuron that contains the nucleus, mitochondria, and most of the cellular organelles. Small tree-like structures called dendrites extend from the cell body to pick up stimuli from the environment, other neurons, or sensory receptor cells. Long transmitting processes called axons extend from the cell body to send signals onward to other neurons or effector cells in the body. There are 3 basic classes of neurons: Also known as sensory neurons, afferent neurons transmit sensory signals to the central nervous system from receptors in the body. Also known as motor neurons, efferent neurons transmit signals from the central nervous system to effectors in the body such as muscles and glands. Interneurons form complex networks within the central nervous system to integrate the information received from afferent neurons and to direct the function of the body through efferent neurons. Each neuron in the body is surrounded by anywhere from 6 to 60 neuroglia that protect, feed, and insulate the neuron. Because neurons are extremely specialized cells that are essential to body function and almost never reproduce, neuroglia are vital to maintaining a functional nervous system. Brain The brain , a soft, wrinkled organ that weighs about 3 pounds, is located inside the cranial cavity, where the bones of the skull surround and protect it. The approximately billion neurons of the brain form the main control center of the body. The brain and spinal cord together form the central nervous system CNS , where information is processed and responses originate. The brain, the seat of higher mental functions such as consciousness, memory, planning, and voluntary actions, also controls lower body functions such as the maintenance of respiration, heart rate, blood pressure, and digestion. Spinal Cord The spinal cord is a long, thin mass of bundled neurons that carries information through the vertebral cavity of the spine beginning at the medulla oblongata of the brain on its superior end and continuing inferiorly to the lumbar region of the spine. The white matter of the spinal cord functions as the main conduit of nerve signals to the body from the brain. The grey matter of the spinal cord integrates reflexes to stimuli. Nerves Nerves are bundles of axons in the peripheral nervous system PNS that act as information highways to carry signals between the brain and spinal cord and the rest of the body. Each axon is wrapped in a connective tissue sheath called the endoneurium. Individual axons of the nerve are bundled into groups of axons called fascicles, wrapped in a sheath of connective tissue called the perineurium. Finally, many fascicles are wrapped together in another layer of connective tissue called the epineurium to form a whole nerve. The wrapping of nerves with connective tissue helps to protect the axons and to increase the speed of their communication within the body. Afferent, Efferent, and Mixed Nerves. Some of the nerves in the body are specialized for carrying information in only one direction, similar to a one-way street. Nerves that carry information from sensory receptors to the central nervous system only are called afferent nerves. Other neurons, known as efferent nerves, carry signals only from the central nervous system to effectors such as muscles and glands. Finally, some nerves are mixed nerves that contain both afferent and efferent axons. Mixed nerves function like 2-way streets where afferent axons act as lanes heading toward the central nervous system and efferent axons act as lanes heading away from the central nervous system. Extending from the inferior side of the brain are 12 pairs of cranial nerves. Each cranial nerve pair is identified by a Roman numeral 1 to 12 based upon its location along the anterior-posterior axis of the brain. Each nerve also has a descriptive name e. The cranial nerves provide a direct connection to the brain for the special sense organs, muscles of the head , neck, and shoulders, the heart, and the GI tract. Extending from the left and right sides of the spinal cord are 31 pairs of spinal nerves. The spinal nerves are mixed nerves that carry both sensory and motor signals between the spinal cord and specific

regions of the body. The 31 spinal nerves are split into 5 groups named for the 5 regions of the vertebral column. Thus, there are 8 pairs of cervical nerves, 12 pairs of thoracic nerves , 5 pairs of lumbar nerves , 5 pairs of sacral nerves , and 1 pair of coccygeal nerves. Each spinal nerve exits from the spinal cord through the intervertebral foramen between a pair of vertebrae or between the C1 vertebra and the occipital bone of the skull. Meninges The meninges are the protective coverings of the central nervous system CNS. They consist of three layers: Made of dense irregular connective tissue, it contains many tough collagen fibers and blood vessels. It lines the inside of the dura mater and contains many thin fibers that connect it to the underlying pia mater. These fibers cross a fluid-filled space called the subarachnoid space between the arachnoid mater and the pia mater. Containing many blood vessels that feed the nervous tissue of the CNS, the pia mater penetrates into the valleys of the sulci and fissures of the brain as it covers the entire surface of the CNS. CSF is formed from blood plasma by special structures called choroid plexuses. The choroid plexuses contain many capillaries lined with epithelial tissue that filters blood plasma and allows the filtered fluid to enter the space around the brain. Newly created CSF flows through the inside of the brain in hollow spaces called ventricles and through a small cavity in the middle of the spinal cord called the central canal. CSF also flows through the subarachnoid space around the outside of the brain and spinal cord. CSF is constantly produced at the choroid plexuses and is reabsorbed into the bloodstream at structures called arachnoid villi. Cerebrospinal fluid provides several vital functions to the central nervous system: CSF absorbs shocks between the brain and skull and between the spinal cord and vertebrae. This shock absorption protects the CNS from blows or sudden changes in velocity, such as during a car accident. The brain and spinal cord float within the CSF, reducing their apparent weight through buoyancy. The brain is a very large but soft organ that requires a high volume of blood to function effectively. The reduced weight in cerebrospinal fluid allows the blood vessels of the brain to remain open and helps protect the nervous tissue from becoming crushed under its own weight. CSF helps to maintain chemical homeostasis within the central nervous system. It contains ions, nutrients, oxygen, and albumins that support the chemical and osmotic balance of nervous tissue. CSF also removes waste products that form as byproducts of cellular metabolism within nervous tissue. What are known as the special sensesâ€”vision, taste, smell, hearing, and balanceâ€”are all detected by specialized organs such as the eyes , taste buds , and olfactory epithelium. Sensory receptors for the general senses like touch, temperature, and pain are found throughout most of the body. All of the sensory receptors of the body are connected to afferent neurons that carry their sensory information to the CNS to be processed and integrated. These signals are then passed on to the central nervous system CNS for further processing by afferent neurons and nerves. The process of integration is the processing of the many sensory signals that are passed into the CNS at any given time. These signals are evaluated, compared, used for decision making, discarded or committed to memory as deemed appropriate. Integration takes place in the gray matter of the brain and spinal cord and is performed by interneurons. Many interneurons work together to form complex networks that provide this processing power. Once the networks of interneurons in the CNS evaluate sensory information and decide on an action, they stimulate efferent neurons. Efferent neurons also called motor neurons carry signals from the gray matter of the CNS through the nerves of the peripheral nervous system to effector cells. The effector may be smooth, cardiac, or skeletal muscle tissue or glandular tissue. The effector then releases a hormone or moves a part of the body to respond to the stimulus. Did you know that DNA testing can help you discover your genetic risk of acquiring certain health conditions that affect the organs of our nervous system? The CNS acts as the control center of the body by providing its processing, memory, and regulation systems. The CNS is also responsible for the higher functions of the nervous system such as language, creativity, expression, emotions, and personality. The brain is the seat of consciousness and determines who we are as individuals. Peripheral Nervous System The peripheral nervous system PNS includes all of the parts of the nervous system outside of the brain and spinal cord. These parts include all of the cranial and spinal nerves, ganglia, and sensory receptors. The SNS is the only consciously controlled part of the PNS and is responsible for stimulating skeletal muscles in the body. The ANS controls subconscious effectors such as visceral muscle tissue, cardiac muscle tissue, and glandular tissue. There are 2 divisions of the autonomic nervous system in the body: The sympathetic division increases respiration and heart rate, releases adrenaline and other stress hormones, and

decreases digestion to cope with these situations. The parasympathetic works to undo the work of the sympathetic division after a stressful situation. Among other functions, the parasympathetic division works to decrease respiration and heart rate, increase digestion, and permit the elimination of wastes. The ENS receives signals from the central nervous system through both the sympathetic and parasympathetic divisions of the autonomic nervous system to help regulate its functions. Action Potentials Neurons function through the generation and propagation of electrochemical signals known as action potentials APs. An AP is created by the movement of sodium and potassium ions through the membrane of neurons. See Water and Electrolytes. At rest, neurons maintain a concentration of sodium ions outside of the cell and potassium ions inside of the cell. This concentration is maintained by the sodium-potassium pump of the cell membrane which pumps 3 sodium ions out of the cell for every 2 potassium ions that are pumped into the cell. The ion concentration results in a resting electrical potential of millivolts mV , which means that the inside of the cell has a negative charge compared to its surroundings. If a stimulus permits enough positive ions to enter a region of the cell to cause it to reach mV, that region of the cell will open its voltage-gated sodium channels and allow sodium ions to diffuse into the cell. Sodium carries a positive charge that causes the cell to become depolarized positively charged compared to its normal negative charge. The depolarization of the cell is the AP that is transmitted by the neuron as a nerve signal. The positive ions spread into neighboring regions of the cell, initiating a new AP in those regions as they reach mV. The AP continues to spread down the cell membrane of the neuron until it reaches the end of an axon. The loss of potassium along with the pumping of sodium ions back out of the cell through the sodium-potassium pump restores the cell to the mV resting potential. At this point the neuron is ready to start a new action potential. Synapses A synapse is the junction between a neuron and another cell.

Chapter 4 : The Nervous Generation: American Thought, - Roderick Nash - Google Books

The Nervous Generation by Roderick Nash, , available at Book Depository with free delivery worldwide.

Young people feeling at sea is nothing new, but my generation is staring down a peculiar set of unknowns. The housing market is the mother lode of uncertainty â€" for most of my contemporaries the idea of buying a house is laughable â€" but there are more insidious encroachments on our sense of calm. Boundaries between work life and personal life continue to blur as we feel obliged to make ourselves perpetually available, and to self-promote with increasingly hostile social media. When I post an article these days I wince. I was raised to believe that the NHS was one of the greatest things about our country, and I still believe that, but funding cuts mean I can no longer rely on it. I need therapy, but the waiting list at my local London practice is seven to eight months. As my generation grows up, will we be able to get free mental healthcare in times of crisis? If not, will we be able to afford to go private? Meanwhile, advertisers sell us the millennial dream â€" an idyll of creative freedom, off-kilter good looks and high-ceilinged apartments. Part of my work is developing commercial content for production companies and advertising agencies. From unfashionably macho brands that want to channel a more inclusive, contemporary masculinity; to car brands that want to move away from traditional life-stage advertising. Some campaigns are progressive and nuanced, many resort to cringeworthy caricature, even fetishisation, of youth: Despite this, it came as a surprise when my anxiety went into overload last year. But nothing prepared me for the meltdown I experienced around my 27th birthday. I felt nauseous at the thought of getting a year older and having so little control over my life: I was trapped in a job I had worked hard to get but hated, dealing with stress in my social life, and was desperately missing my boyfriend who had spent the past two years studying abroad. I was miserable and filled with worries about the future. How would I ever progress in my career? Would my relationship soon fall apart? Then, one night, I just stopped sleeping. In the midst of my anxiety and depression I felt as though someone had come along and drenched me in water, diluting my personality so that I was no longer myself. I felt a great deal of shame about how unhappy I felt, especially given the fact that on paper my life was great. I had a job that other people envied, and was living in a big flat in north London with friends. Funnily enough, when I did eventually open up to friends, many said they had the same fears and worries. Suddenly I felt less alone. I found CBT so patronising When I first encountered shooting pains in my arms, palpitations and short breaths, I thought I was having a heart attack and rang an ambulance. I sat in one while they stuck things on my chest and took my blood pressure and told me I was fine. But this kept on happening. Yet every time I had one of these, I was sure they had missed something, and I ended up becoming a serious hypochondriac. I spent a night in a hospital ward next to somebody who had a collapsed lung â€" a real medical emergency. But it only served as temporary relief, as my mind would just play tricks on me as to what else it could be, something they may have missed. I became hypersensitive to any physical sensation. I convinced myself regularly I was dying, which caused more anxiety through physical manifestations of panic. The first half of the sessions were spent filling out questionnaires asking you to rate between one and five how suicidal you felt. I eventually managed to overcome that period of my life when I learned to understand the ideology behind CBT, but it took a long time. Anxiety crippled me for years. Mental health is still something that is stigmatised and rarely talked about in public. Come out and be honest with those who care about you. I reckon I have both and, for many people, they tend to feed into one another. I really sympathise with those young people who are leaving home now and facing these worries in an increasingly unfriendly wider world. I am grateful for the small amount of stability I do have, but I grew up skint and as a result will probably always worry about ending up skint again. Saying that, it means that not being overdrawn feels like the height of success. My own house is a pipe dream, but I know that while the stability it would provide might not solve all my problems, it would certainly make things less stressful on a day-to-day basis.

Chapter 5 : Human Physiology - Neurons & the Nervous System

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It is one of the many vanities of criticism to promise immortality to the authors that it praises, to patronise a writer with the assurance that our great-grandchildren, whose time and tastes are thus frivolously mortgaged, will read his works with delight. Nevertheless, without handling the prickly question of literary immortality, it is easy to recognise that the literary reputation of Robert Louis Stevenson is made of good stuff. His fame has spread, as lasting fame is wont to do, from the few to the many. HYDE he had shown himself a delicate marksman. And although large editions are nothing, standard editions, richly furnished and complete, are worthy of remark. Stevenson is one of the very few authors in our literary history who have been honoured during their lifetime by the appearance of such an edition; the best of his public, it would seem, do not only wish to read his works, but to possess them, and all of them, at the cost of many pounds, in library form. It would be easy to mention more voluminous and more popular authors than Stevenson whose publishers could not find five subscribers for an adventure like this. He has made a brave beginning in that race against Time which all must lose. It is not in the least necessary, after all, to fortify ourselves with the presumed consent of our poor descendants, who may have a world of other business to attend to, in order to establish Stevenson in the position of a great writer. Let us leave that foolish trick to the politicians, who never claim that they are right - merely that they will win at the next elections. Literary criticism has standards other than the suffrage; it is possible enough to say something of the literary quality of a work that appeared yesterday. Will a book live? Will a cricket match live? Perhaps not, and yet both be fine achievements. It is not easy to estimate the loss to letters by his early death. I still mean to get my health again; I still purpose, by hook or crook, this book or the next, to launch a masterpiece. His greatest was perhaps yet to come. Had Dryden died at his age, we should have had none of the great satires; had Scott died at his age, we should have had no Waverley Novels. Dying at the height of his power, and in the full tide of thought and activity, he seems almost to have fulfilled the aspiration and unconscious prophecy of one of the early essays: For surely, at whatever age it overtake the man, this is to die young. Death has not been suffered to take so much as an illusion from his heart. In the hot-fit of life, a- tiptoe on the highest point of being , he passes at a bound on to the other side. The noise of the mallet and chisel is scarcely quenched, the trumpets are hardly done blowing, when, trailing with him clouds of glory, this happy starred, full-blooded spirit shoots into the spiritual land. What strengthens the conviction that he might yet have surpassed himself and dwarfed his own best work is, certainly no immaturity, for the flavour of wisdom and old experience hangs about his earliest writings, but a vague sense awakened by that brilliant series of books, so diverse in theme, so slight often in structure and occasions so gaily executed, that here was a finished literary craftsman, who had served his period of apprenticeship and was playing with his tools. Stevenson had the sport-impulse at the depths of his nature, but he also had, perhaps he had inherited, an instinct for work in more blockish material, for lighthouse- building and iron-founding. In his volume of poems he almost apologises for his excellence in literature: It is an admirable farce, hardly touched with grimness, unshaken by the breath of reality , full of fantastic character ; the strange funeral procession is attended by shouts of glee at each of its stages, and finally melts into space. But, when all is said, it is not with work of this kind that Olympus is stormed; art must be brought closer into relation with life, these airy and delightful freaks of fancy must be subdued to a serious scheme if they are to serve as credentials for a seat among the immortals. The decorative painter, whose pencil runs so freely in limning these half-human processions of outlined fauns and wood-nymphs, is asked at last to paint an easel picture. Stevenson is best where he shows most restraint, and his peculiarly rich fancy, which ran riot at the suggestion of every passing whim, gave him, what many a modern writer sadly lacks, plenty to restrain, an exuberant field for self-denial. Here was an opportunity for art and labour; the luxuriance of the virgin forests of the West may be clipped and pruned for a lifetime with no fear of reducing them to the trim similitude of a Dutch

garden. His bountiful and generous nature could profit by a spell of training that would emaciate a poorer stock. The realism , as it is called, that deals only with the banalities and squalors of life, and weaves into the mesh of its story no character but would make you yawn if you passed ten minutes with him in a railway-carriage, might well take a lesson from this man, if it had the brains. Picture to yourself it is not hard an average suburb of London. The long rows of identical bilious brick houses, with the inevitable lace curtains, a symbol merely of the will and power to wash; the awful nondescript object , generally under glass, in the front window - the shrine of the unknown god of art; the sombre invariable citizen, whose garb gives no suggestion of his occupation or his tastes - a person, it would seem, only by courtesy; the piano-organ the music of the day, and the hideous voice of the vendor of half-penny papers the music of the night; could anything be less promising than such a row of houses for the theatre of romance? Set a realist to walk down one of these streets: Yet Stevenson, it seems likely, could not pass along such a line of brick bandboxes without having his pulses set a-throbbing by the imaginative possibilities of the place. Of his own Lieutenant Brackenbury Rich he says: He glanced at the houses and marvelled what was passing behind those warmly lighted windows; he looked into face after face, and saw them each intent upon some unknown interest, criminal or kindly. Morris, was giving a party in one of the houses of West Kensington. In one at least of the houses of that brick wilderness human spirits were being tested as on an anvil, and most of them tossed aside. Harry Hartley and his treasures precipitated over the wall; it was in the same garden that the Rev. Simon Rolles suddenly, to his own surprise, became a thief. A monotony of bad building is no doubt a bad thing, but it cannot paralyse the activities or frustrate the agonies of the mind of man. His attitude towards the surprising and momentous gifts of life was one prolonged passion of praise and joy. There is none of his books that reads like the meditations of an invalid. He has the readiest sympathy for all exhibitions of impulsive energy; his heart goes out to a sailor, and leaps into ecstasy over a generous adventurer or buccaneer. Of one of his earlier books he says: Indeed, his zest in life, whether lived in the back gardens of a town or on the high seas, was so great that it seems probable the writer would have been lost had the man been dowered with better health. But from Stevenson, although not only the town, but oceans and continents, beckoned him to deeds, no such wail escaped. His indomitable cheerfulness was never embarked in the cock-boat of his own prosperity. A high and simple courage shines through all his writings. It is supposed to be a normal human feeling for those who are hale to sympathize with others who are in pain. Stevenson reversed the position, and there is no braver spectacle in literature than to see him not asking others to lower their voices in his sick-room, but raising his own voice that he may make them feel at ease and avoid imposing his misfortunes on their notice. He made no account of my groans, which he accepted , as he had to accept so much else, as a piece of the inexplicable conduct of his elders; and, like a wise young gentleman, he would waste no wonder on the subject. It might have been safely predicted that this man, should he ever attain to pathos, would be free from the facile, maudlin pathos of the hired sentimentalist. And so also with what Dr. In his well- known elegiac stanzas Matthew Arnold likens his own state to that of the monks: Their faith , my tears, the world deride - I come to shed them at their side. Those He approves that ply the trade, That rock the child, that wed the maid, That with weak virtues , weaker hands, Sow gladness on the peopled lands, And still with laughter, song, and shout Spin the great wheel of earth about. Life is of value only because it can be spent, or given; and the love of God coveted the position, and assumed mortality. If a man treasure and hug his life, one thing only is certain, that he will be robbed some day, and cut the pitiable and futile figure of one who has been saving candle-ends in a house that is on fire. Better than this to have a foolish spendthrift blaze and the loving cup going round. There was no room for them in the boat, and they were left on a desert island to a certain death. Glad did I live and gladly die, And I laid me down with a will. This be the verse you grave for me: The most remarkable feature of the work he has left is its singular combination of style and romance. It has so happened, and the accident has gained almost the strength of a tradition, that the most assiduous followers of romance have been careless stylists. They have trusted to the efficacy of their situation and incident, and have too often cared little about the manner of its presentation. By an odd piece of irony style has been left to the cultivation of those who have little or nothing to tell. But Stevenson, who had romance tingling in every vein of his body, set himself laboriously and patiently to train his other faculty, the faculty of style. A poet is born, not made, - so is every

man, - but he is born raw. All writing is a kind of word-weaving; a skilful writer will make a splendid tissue out of the diverse fibres of words. But to care for words, to select them judiciously and lovingly, is not in the least essential to all writing, all speaking; for the sad fact is this, that most of us do our thinking , our writing, and our speaking in phrases, not in words. The work of a feeble writer is always a patchwork of phrases, some of them borrowed from the imperial texture of Shakespeare and Milton, others picked up from the rags in the street. How many overworn quotations from Shakespeare suddenly leap into meaning and brightness when they are seen in their context! But the man of affairs has neither the time to fashion his speech, nor the knowledge to choose his words, so he borrows his sentences ready- made, and applies them in rough haste to purposes that they do not exactly fit. Such a man inevitably repeats, like the cuckoo, monotonous catchwords, and lays his eggs of thought in the material that has been woven into consistency by others. It is a matter of natural taste , developed and strengthened by continual practice, to avoid being the unwitting slave of phrases. The artist in words, on the other hand, although he is a lover of fine phrases, in his word-weaving experiments uses no shoddy, but cultivates his senses of touch and sight until he can combine the raw fibres in novel and bewitching patterns. To this end he must have two things: It is amazing what nobility a mere truism is often found to possess when it is clad with a garment thus woven. Stevenson had both these sensitive capabilities in a very high decree. His careful choice of epithet and name have even been criticised as lending to some of his narrative-writing an excessive air of deliberation. His daintiness of diction is best seen in his earlier work; thereafter his writing became more vigorous and direct, fitter for its later uses, but never unillumined by felicities that cause a thrill of pleasure to the reader. Of the value of words he had the acutest appreciation. Sometimes, as here, this subtle sense of double meanings almost leads to punning. His loving regard for words bears good fruit in his later and more stirring works. He has a quick ear and appreciation for live phrases on the lips of tramps, beach-combers, or Americans. When old Adams saw it, he took and shook me by the hand. I never saw him again but the once. I took and put up a bit of stick to him: Go thou and do likewise. I never could see much harm in Johnny. No go - he was booked beyond Kennedy. Then he had tried to open a case of gin. It was a delicate ear and a sense trained by practice that picked up these vivid turns of speech, some of them perhaps heard only once, and a mind given to dwell on words, that remembered them for years, and brought them out when occasion arose. His mastery of syntax, the orderly and emphatic arrangement of words in sentences, a branch of art so seldom mastered, was even greater. And here he could owe no great debt to his romantic predecessors in prose.

Chapter 6 : The nervous generation: American thought, | National Library of Australia

The Nervous Generation: American Thought, by Roderick NASH and a great selection of similar Used, New and Collectible Books available now at blog.quintoapp.com

Scientists used to think that nerve cells were incapable of regeneration if they were damaged. More recently, biologists have discovered that nerve cells probably can regenerate. This has been a problem for people who injure their nerves or nervous system. Damage to the nervous system can often cause a person to be paralyzed. Without these neurons, it becomes difficult or impossible to move arms or legs or even to breathe. Stem Cells to the Rescue! Under just the right conditions, stem cells top can become nerve cells bottom. New research shows that stem cells might be able to help this problem by becoming neurons themselves. What are stem cells? Well, each cell in your body has a purpose. Muscle cells contract and make your muscles move your body. Skin cells form a barrier between the inside of your body and the outside world. Nerve cells send information and tell your body what to do. Well, not yet at least. All cells start out without a purpose. They have no job. But all cells go through a process called differentiation. Differentiation turns them from a cell without a job into a specific type of cell that has a specific purposeâ€”like a muscle cell or a neuron. You might ask, "So what? Scientists think that if they can tell stem cells to turn into neurons, then they might be able to help paralyzed people move again. They might even be able to grow new organs like kidneys or hearts for people who need those too by using stem cells.

Chapter 7 : Human Physiology/The Nervous System - Wikibooks, open books for an open world

The Nervous generation by Roderick Nash, , Elephant Paperbacks edition, in English.

Altered mood and impulsive behavior Auditory hallucinations Depression[edit] Depression is the most common major mental illness and is characterized by both emotional and physical symptoms. Symptoms of depression are: The cause of depression and its symptoms are a mystery but we do understand that it is an illness associated with biochemical changes in the brain. A lot of research goes on to explain that it is associated with a lack of amines serotonin and norephinephrine. Therefore pharmacological treatment strategies often try to increase amine concentrations in the brain. One class of antidepressants is monoamine oxidase inhibitors. Mono amine oxidase is an enzyme that breaks down your amines like norephinephrine and serotonin. Because the antidepressants inhibit their degradation they will remain in the synaptic cleft for a longer period of time making the effect just as if you had increased these types of neurotransmitters. Another common form of depression is manic depression. Mania is an acute state characterized by: Excessive elation and impaired judgment Insomnia and irritability Hyperactivity Uncontrolled speech Manic depression, also known as bipolar disorder, displays mood swings between mania and depression. The limbic system receptors are unregulated. Drugs used are unique mood stabilizers. These diseases selectively attack CA1, which effectively cuts through the hippocampal circuit. I had a stroke. As an avid viewer of medical programs on television I assumed that I would have physical therapy for my paralyzed left side and get on with my life. No one ever mentioned pain or the possibility of pain, as a result of the stroke. I did experience unusual sensitivity to touch while still in the hospital, but nothing to prepare me for what was to come. The part of my brain that is damaged is the Thalamus. This turns out to be the pain center and what I have now is an out of control Thalamus, resulting in Thalamic Pain syndrome, also called Central Pain Syndrome. This means that 24 hours a day, seven days a week, my brain sends messages of pain and it never goes away. I am under the care of physicians, who not only understand chronic pain, but are also willing to treat it with whatever medications offer some help. None of the medications, not even narcotic medications, take the pain away. They just allow me to manage it so I can function. The Peripheral Nervous System[edit] The Cranial Nerves The peripheral nervous system includes 12 cranial nerves 31 pairs of spinal nerves. It can be subdivided into the somatic and autonomic systems. It is a way of communication from the central nervous system to the rest of the body by nerve impulses that regulate the functions of the human body. The twelve cranial nerves are I Olfactory Nerve for smell II Optic Nerve for vision III Oculomotor for looking around IV Trochlear for moving eye V Trigeminal for feeling touch on face VI Abducens to move eye muscles VII Facial to smile, wink, and help us taste VIII Vestibulocochlear to help with balance, equilibrium, and hearing IX Glossopharyngeal for swallowing and gagging X Vagus for swallowing, talking, and parasympathetic actions of digestion XI Spinal accessory for shrugging shoulders XII Hypoglossal for tongue more divided into different regions as muscles 10 out of the 12 cranial nerves originate from the brain stem I and II are in the cerebrum , and mainly control the functions of the anatomic structures of the head with some exceptions. CN X receives visceral sensory information from the thorax and abdomen, and CN XI is responsible for innervating the sternocleidomastoid and trapezius muscles, neither of which is exclusively in the head. Spinal nerves take their origins from the spinal cord. They control the functions of the rest of the body. In humans, there are 31 pairs of spinal nerves: The naming convention for spinal nerves is to name it after the vertebra immediately above it. Thus the fourth thoracic nerve originates just below the fourth thoracic vertebra. This convention breaks down in the cervical spine. The first spinal nerve originates above the first cervical vertebra and is called C1. This continues down to the last cervical spinal nerve, C8. There are only 7 cervical vertebrae and 8 cervical spinal nerves. Lateral cord[edit] The lateral cord gives rise to the following nerves: The lateral pectoral nerve, C5, C6 and C7 to the pectoralis major muscle, or musculus pectoralis major. The musculocutaneous nerve which innervates the biceps muscle The median nerve, partly. The other part comes from the medial cord. See below for details. Posterior cord[edit] diagram showing human dermatoms, i. The posterior cord gives rise to the following nerves: The upper subscapular nerve, C7 and C8, to the subscapularis muscle, or musculus supca of the rotator

cuff. The lower subscapular nerve, C5 and C6, to the teres major muscle, or the musculus teres major, also of the rotator cuff. The thoracodorsal nerve, C6, C7 and C8, to the latissimus dorsi muscle, or musculus latissimus dorsi. The axillary nerve, which supplies sensation to the shoulder and motor to the deltoid muscle or musculus deltoideus, and the teres minor muscle, or musculus teres minor. The radial nerve, or nervus radialis, which innervates the triceps brachii muscle, the brachioradialis muscle, or musculus brachioradialis,, the extensor muscles of the fingers and wrist extensor carpi radialis muscle , and the extensor and abductor muscles of the thumb. See radial nerve injuries. The medial cord gives rise to the following nerves: The median pectoral nerve, C8 and T1, to the pectoralis muscle The medial brachial cutaneous nerve, T1 The medial antebrachial cutaneous nerve, C8 and T1 The median nerve, partly. The other part comes from the lateral cord. C7, C8 and T1 nerve roots. The first branch of the median nerve is to the pronator teres muscle, then the flexor carpi radialis, the palmaris longus and the flexor digitorum superficialis. The median nerve provides sensation to the anterior palm, the anterior thumb, index finger and middle finger. It is the nerve compressed in carpal tunnel syndrome. The ulnar nerve originates in nerve roots C7, C8 and T1. It provides sensation to the ring and pinky fingers. It innervates the flexor carpi ulnaris muscle, the flexor digitorum profundus muscle to the ring and pinky fingers, and the intrinsic muscles of the hand the interosseous muscle, the lumbrical muscles and the flexor pollicus brevis muscle. This nerve traverses a groove on the elbow called the cubital tunnel, also known as the funny bone. Striking the nerve at this point produces an unpleasant sensation in the ring and little fingers. Other thoracic spinal nerves T3-T12 [edit] The remainder of the thoracic spinal nerves, T3 through T12, do little recombining. They form the intercostal nerves, so named because they run between the ribs. For points of reference, the 7th intercostal nerve terminates at the lower end of the sternum, also known as the xyphoid process. The 10th intercostal nerve terminates at the umbilicus, or the belly button. The somatic nervous system is that part of the peripheral nervous system associated with the voluntary control of body movements through the action of skeletal muscles, and also reception of external stimuli. The somatic nervous system consists of afferent fibers that receive information from external sources, and efferent fibers that are responsible for muscle contraction. The somatic system includes the pathways from the skin and skeletal muscles to the Central Nervous System. It is also described as involved with activities that involve consciousness. The basic route of the efferent somatic nervous system includes a two neuron sequence. The first is the upper motor neuron, whose cell body is located in the precentral gyrus Brodman Area 4 of the brain. It receives stimuli from this area to control skeletal voluntary muscle. The upper motor neuron carries this stimulus down the corticospinal tract and synapses in the ventral horn of the spinal cord with the alpha motor neuron, a lower motor neuron. The upper motor neuron releases acetylcholine from its axon terminal knobs and these are received by nicotinic receptors on the alpha motor neuron. The alpha motor neurons cell body sends the stimulus down its axon via the ventral root of the spinal cord and proceeds to its neuromuscular junction of its skeletal muscle. There, it releases acetylcholine from its axon terminal knobs to the muscles nicotinic receptors, resulting in stimulus to contract the muscle. The somatic system includes all the neurons connected with the muscles, sense organs and skin. It deals with sensory information and controls the movement of the body. The Autonomic System[edit] The Autonomic system deals with the visceral organs, like the heart, stomach, gland, and the intestines. It regulates systems that are unconsciously carried out to keep our body alive and well, such as breathing, digestion peristalsis , and regulation of the heartbeat. The Autonomic system consists of the sympathetic and the parasympathetic divisions. Both divisions work without conscious effort, and they have similar nerve pathways, but the sympathetic and parasympathetic systems generally have opposite effects on target tissues they are antagonistic. By controlling the relative input from each division, the autonomic system regulates many aspects of homeostasis. One of the main nerves for the parasympathetic autonomic system is Cranial Nerve X, the Vagus nerve. The right sympathetic chain and its connections with the thoracic, abdominal, and pelvic plexuses. The Sympathetic and Parasympathetic Systems[edit] The sympathetic nervous system activates what is often termed the fight or flight response, as it is most active under sudden stressful circumstances such as being attacked. This response is also known as sympathetico-adrenal response of the body, as the pre-ganglionic sympathetic fibers that end in the adrenal medulla but also all other sympathetic fibers secrete acetylcholine, which activates the secretion of adrenaline

epinephrine and to a lesser extent noradrenaline norepinephrine from it. Therefore, this response that acts primarily on the cardiovascular system is mediated directly via impulses transmitted through the sympathetic nervous system and indirectly via catecholamines secreted from the adrenal medulla. Western science typically looks at the SNS as an automatic regulation system, that is, one that operates without the intervention of conscious thought. Some evolutionary theorists suggest that the sympathetic nervous system operated in early organisms to maintain survival Origins of Consciousness, Robert Ornstein; et al. One example of this priming is in the moments before waking, in which sympathetic outflow spontaneously increases in preparation for action. The parasympathetic nervous system is part of the autonomic nervous system. Sometimes called the rest and digest system or feed and breed. The parasympathetic system conserves energy as it slows the heart rate, increases intestinal and gland activity, and relaxes sphincter muscles in the gastrointestinal tract. After high stress situations ie: For example, the increase in heart rate that comes along with a sympathetic reaction will result in an abnormally slow heart rate during a parasympathetic reaction. Organization[edit] Sympathetic nerves originate inside the vertebral column, toward the middle of the spinal cord in the intermediolateral cell column or lateral horn , beginning at the first thoracic segment of the spinal cord and extending into the second or third lumbar segments.

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Potassium channel Voltage sensing in a sodium ion channel. Each voltage sensor has four positive charges amino acids Modified slightly from Sigworth All these positively-charged sodiums rushing in causes the membrane potential to become positive the inside of the membrane is now positive relative to the outside. The sodium channels open only briefly, then close again. The potassium channels then open, and, because there is more potassium inside the membrane than outside, positively-charged potassium ions diffuse out. As these positive ions go out, the inside of the membrane once again becomes negative with respect to the outside Animation: The minimum stimulus needed to achieve an action potential is called the threshold stimulus. The threshold stimulus causes the membrane potential to become less negative because a stimulus, no matter how small, causes a few sodium channels to open and allows some positively-charged sodium ions to diffuse in. If the membrane potential reaches the threshold potential generally 5 - 15 mV less negative than the resting potential , the voltage-regulated sodium channels all open. All-or-None Law - action potentials occur maximally or not at all. ABSOLUTE - During an action potential, a second stimulus will not produce a second action potential no matter how strong that stimulus is corresponds to the period when the sodium channels are open typically just a millisecond or less Source: So, it takes a very strong stimulus to cause an action potential at the beginning of the relative refractory period, but only a slightly above threshold stimulus to cause an action potential near the end of the relative refractory period The absolute refractory period places a limit on the rate at which a neuron can conduct impulses, and the relative refractory period permits variation in the rate at which a neuron conducts impulses. Such variation is important because it is one of the ways by which our nervous system recognizes differences in stimulus strength, e. How does the relative refractory period permit variation in rate of impulse conduction? If that neuron is continuously stimulated at a level of 0. If we increase the stimulus e. Because 1 volt is an above-threshold stimulus, it means that, once an actional potential has been generated, another one will occur in less than 20 ms or, in other words, before the end of the relative refractory period. Thus, in our example, the increased stimulus will increase the rate of impulse conduction above 50 per second. Refractory periods Impulse conduction - an impulse is simply the movement of action potentials along a nerve cell. Action potentials are localized only affect a small area of nerve cell membrane. This process repeats itself and action potentials move down the nerve cell membrane. These cells produce large membranous extensions that ensheath the axons in successive layers that are then compacted by exclusion of cytoplasm black to form the myelin sheath. Myelination, the process by which glial cells ensheath the axons of neurons in layers of myelin, ensures the rapid conduction of electrical impulses in the nervous system. The formation of myelin sheaths is one of the most spectacular examples of cell-cell interaction and coordination in nature. Myelin sheaths are formed by the vast membranous extensions of glial cells: The axon is wrapped many times like a Swiss roll by these sheetlike membrane extensions to form the final myelin sheath, or internode. Internodes can be as long as 1 mm and are separated from their neighbors by a short gap the node of Ranvier of 1 micrometer. The concentration of voltage-dependent sodium channels in the axon membrane at the node, and the high electrical resistance of the multilayered myelin sheath, ensure that action potentials jump from node to node a process termed "saltatory conduction" ffrench-Constant Between areas of myelin are non-myelinated areas called the nodes of Ranvier. Because fat myelin acts as an insulator, membrane coated with myelin will not conduct an impulse. Impulse conduction and Schwann cells Types of Neurons - the three main types of neurons are:

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Issue # The Nervous Generation: I Can't Even I think it's about time an actual millennial tried to write something about millennials. How about we don't let another wine tasting CBC baby boomer try and dissect our twitter or our interwebs.