

Chapter 1 : Humans Have a Lot More Than Five Senses

Human bodies produce a weak electromagnetic field, if away from other sources of electromagnetism, the only magnetic fields to sense would be the planet's, your own, and those of others. Since there's no interference, it would be easier to sense the change in magnetic fields caused when a person moves.

See the Top 10 Questions Our senses allow us to learn, to protect ourselves, to enjoy our world. Can you imagine what it might be like to live your life without any of your senses? The senses usually work together to give us a clear picture of the things around us. If one sense is not working due to an accident or illness, then other senses will take over or become stronger to make up for the missing sense. The five senses are: Taste Our sense of taste comes from the taste buds on our tongue. These buds are also called papillae say: But, the sense of smell also affects our taste. The tongue is only able to taste four separate flavors: But, you might ask, how come different sweet foods taste different if there are only four flavors? And the chips in your chocolate chip cookie could be a combination of sweet and bitter. Everything you taste is one or more combinations of these four flavors. Not only can your tongue taste, but it also picks up texture and temperature in your food like creamy, crunchy, hot or dry. Your tongue is also one of the strongest muscles in your body and is able to heal from injury more quickly than other parts of your body. We also need our tongue to produce certain sounds when we speak. Learn more about taste from KidsHealth. Here is a great diagram of the parts of the tongue. Sight Our sense of sight is all dependent upon our eyes. A lens at the front of the eyeball helps to focus images onto the retina at the back of the eye. The retina is covered with two types of light sensitive cells – the cones and the rods. The cones allow us to see color and the rods allow us to see better at night and also aid us in our peripheral vision. All of this information is sent to the brain along the optic nerve. The images sent are actually upside down and our brain makes sense of what it receives by turning the image right side up. The brain also uses the images from two eyes to create a 3D three dimensional image. This allows us to perceive depth. Some people are not able to tell red colors from green colors. This is called color blindness. Others, through injury or other conditions, have little to no sight at all. Want to take a color blindness test? Learn about blindness from KidsHealth. Here is a great diagram of the eyeball. Touch The sense of touch is spread through the whole body. Nerve endings in the skin and in other parts of the body send information to the brain. There are four kinds of touch sensations that can be identified: Hair on the skin increase the sensitivity and can act as an early warning system for the body. The fingertips have a greater concentration of nerve endings. People who are blind can use their sense of touch to read Braille which is a kind of writing that uses a series of bumps to represent different letters of the alphabet. Want to learn more about Braille? Our skin is the largest organ in our body and contains the most nerve endings. Are some areas of your skin more sensitive to touch than others? Learn all about it with this experiment at KidsHealth. Smell Our nose is the organ that we use to smell. The inside of the nose is lined with something called the mucous membranes. These membranes have smell receptors connected a special nerve, called the olfactory nerve. Smells are made of fumes of various substances. The smell receptors react with the molecules of these fumes and then send these messages to the brain. Our sense of smell is capable of identifying seven types of sensations. These are put into these categories: The sense of smell is sometimes lost for a short time when a person has a cold. Dogs have a more sensitive sense of smell than man. In addition to being the organ for smell, the nose also cleans the air we breathe and impacts the sound of our voice. Try plugging your nose while you talk. Smell is also an aide in the ability to taste. Take a peek at the inside of the nose here. Learn more about how your nose works at KidsHealth. Hearing Our ears, which help us hear, are made of two separate parts: The outer ear is the part that others see. It works like a cup to catch sound as it travels past our heads. This part is made of cartilage and skin. From here, sound travels to the tympanic membrane and then onto the inner ear via the three smallest bones in your body. The inner ear is also called the cochlea and is a spiral shaped tube which translates vibrations into sound and sends that message to the brain through the auditory nerve. The brain uses the sounds from both the left and the right ear to determine distance and direction of sounds. Some people who are unable to hear rely on sign language for communication. This is done by using their hands and body language

to communicate with others. Learn more about sign language at Sign Time. Learn more about how your ears do their job at KidsHealth. Additional Senses In addition to sight, smell, taste, touch, and hearing, humans also have the sense of balance, pressure, temperature, pain, and motion. These various "new" senses all work together and may involve the coordinated use of the sense organs. The sense of balance is managed by a complicated network of various body systems. Any quick change to any of the five senses can cause the feeling of dizziness or unsteadiness. You might have experienced this while riding in a car or turning quickly. Give This a Try This is your opportunity to try an experiment with your senses. Take a deep breath and chew. What do you notice? Some of our enjoyment of eating comes from the fragrances of the food. What foods do you enjoy smelling? Some fragrances will even bring back strong memories. Click on a Topic:

Chapter 2 : How does the sense of touch work? | The Five Senses - Sharecare

Proprioception is the sense of the relative position of neighbouring parts of the body and strength of effort being employed in movement. This sense is very important as it lets us know exactly where our body parts are, how we are positioned in space and to plan our movements.

Daven Hiskey comments Today I found out humans have a lot more than five senses. It turns out, there are at least nine senses and most researchers think there are more like twenty-one or so. This technically is two senses given the two distinct types of receptors present, one for color cones and one for brightness rods. This is sometimes argued to be five senses by itself due to the differing types of taste receptors sweet, salty, sour, bitter, and umami, but generally is just referred to as one sense. The taste sense, unlike sight, is a sense based off of a chemical reaction. Touch: This has been found to be distinct from pressure, temperature, pain, and even itch sensors. Obvious sense is obvious. Surprisingly, this is a distinct sensor system from other touch-related senses. Ability to sense heat and cold. This also is thought of as more than one sense. These thermoceptors in the brain are used for monitoring internal body temperature. Detecting vibrations along some medium, such as air or water that is in contact with your ear drums. Yet another of the sensors that work off of a chemical reaction. This sense combines with taste to produce flavors. This sense gives you the ability to tell where your body parts are, relative to other body parts. This sense is one of the things police officers test when they pull over someone who they think is driving drunk. This sense is used all the time in little ways, such as when you scratch an itch on your foot, but never once look at your foot to see where your hand is relative to your foot. These are found in such places as your muscles and allow the brain the ability to monitor muscle tension. In a word, pain. There are three distinct types of pain receptors: The sense that allows you to keep your balance and sense body movement in terms of acceleration and directional changes. This sense also allows for perceiving gravity. The sensory system for this is found in your inner ears and is called the vestibular labyrinthine system. These are found in such places as the lungs, bladder, stomach, and the gastrointestinal tract. A type of stretch receptor, that senses dilation of blood vessels, is also often involved in headaches. These trigger an area of the medulla in the brain that is involved in detecting blood born hormones and drugs. It also is involved in the vomiting reflex. This system more or less allows your body to monitor its hydration level and so your body knows when it should tell you to drink. This system allows your body to detect when you need to eat something. Unlike most birds, humans do not have a strong magnetoception, however, experiments have demonstrated that we do tend to have some sense of magnetic fields. The mechanism for this is not completely understood; it is theorized that this has something to do with deposits of ferric iron in our noses. This would make sense if that is correct as humans who are given magnetic implants have been shown to have a much stronger magnetoception than humans without. This one is debated as no singular mechanism has been found that allows people to perceive time. However, experimental data has conclusively shown humans have a startling accurate sense of time, particularly when younger. The mechanism we use for this seems to be a distributed system involving the cerebral cortex, cerebellum, and basal ganglia. Long term time keeping seems to be monitored by the suprachiasmatic nuclei responsible for the circadian rhythm. Short term time keeping is handled by other cell systems.

Chapter 3 : General Ahiman Rezon: Second Degree: Fellow-Craft: The Five Senses of Human Nature

The sensory system is basically comprised of the brain, spinal cord, and neurons. It is the neurological wiring by which we perceive and process sensory information coming from outside and even inside our bodies.

Just so you know, people, there are more than five senses! Like for instance, this next one liner is gonna suck: Human beings, in general, have five sense organs that receive information from the environment and transfer them to brain for processing. The accuracy of the processed information has direct relation to the amount and quality of the received information by each particular sense organ. An extension in functionality of the sense organs will help people to better interact with their surroundings in their daily lives. It is rather human centered interactive technologies. I know I have synthenasia where I hear colors. Also I have a weird ability. I can see in two directions at once, plus I have the ability to hyper focus where I can literally forget who and where i am. I feel it physically in my stomach. I think the five senses they teach you about in school are the clear interfaces we have with the external world. They are the only reliably replicate-able way we can get information about the state of what is outside our body, into our body and to the brain. The rest is all just internal wiring. These are people who spent gigantic chunks of their lives learning this stuff, becoming legitimate experts, so we can just reap the benefits of their knowledge. ScottG Post 18 I agree there are more than five basic senses. Although the aforementioned additional senses I do consider to fall under the classification of one of those five broad categories. The senses thermoception and nociception, as explained in this article, I would not classify as anything but a sub-sense under the more basic sense of feel. I do agree that an argument can be made that the sense of balance and special reasoning could be classified separately but a case could just as easily be made that those are just extensions to the sense of feel as well. I will break out some additional senses and "sub-senses" that I believe could be considered. But we do have other senses certainly! I propose three additional broad categories. First, I propose that we have a sense of reason and the degree to which that sense has developed for human kind is pretty special. Some of the secondary senses or "sub-senses," as I have been calling them, would be baseless conjecture or a sense of intuition. Logic and cognition would also fall under this category. This is a very sophisticated sense and hosts a multitude of other secondary senses that would make the list too long to add to base senses, such as a sense of direction, a sense of time, etc. Additionally, we also have a sense of emotion that should be clearly separated from the first five senses. Oxytocin, serotonin and dopamine are powerful things and their release is not always from the stimulus of one of the traditional five senses. Empathy could be considered a sub-sense of emotion and is seen in many cognitively developed animals. Instinct would be the equivalent of empathy for less cognitively developed animals than humans. We have evolved from that. We experience this even though we may be unaware of the battles that go on at a cellular and molecular level. We are each a multitude. We know when we are dehydrated or sick. When white blood cells seek out invading cells and foreign bodies, that is a programed response from an outside source, and I would call that a sense. When we sense a change in our biology or chemistry we can be caused to feel sick, weak, fatigued or even loopy. All these are manifestations of our sense of chemical and biological identity, although the means through which interpret this sense usually stems from one of the other five senses. Though I really tried hard to break this into three additional categories, I feel there may be more. Please, I am eager to hear any responses and would like to reflect on my ideas with all you smart people out there. Please, tear my arguments apart! Am I totally off base or do you agree with me? I want to hear your thoughts and fuel this discussion. Thanks for taking the time to read my contribution. Spin quickly with your eyes closed. Just make sure you are going to fall safely. All five of the senses there are only five communicate something unique about the environment around us. Each is really a very complex and highly specialized system. Touch is feeling nerve impulses. Sight is detecting photons. Smell is detecting the chemical nature of a substance by the tiny molecules that float in the air around it. Hearing is detecting sound waves. Taste is detecting the flavor of something. The chemical make up of a substance in contact with the tongue. The sense of heat is nothing more than the sense of touch. The brain identifies those feelings as heat. A case could be made that the brain also detects what it needs by what is

missing from the blood. But, most of the time, the awareness comes from something identified with the other five senses. The dividing line is not significant for most people, hence why most "skin" senses are usually lumped together, but "touch" and "thermoreception" are in no way linked. Nocireceptors, that is pain receptors, respond to different a region in the brain than proprioceptors in the skin. Nocireceptors actually do not respond to pressure stimuli as proprioceptors do. Visceral pain, pain from say, holding your breath, is not activated by nerves but by nocireceptors firing. Pain caused by loss of blood or oxygen is an alert signal rather than an external sensory message. Further, arguing that because two or more organs are involved negates most senses. After all, taste comes from smell. The taste buds are actually just signaling to the brain which nutrient is present carbs, glucose, protein, etc. Some scientists do break down the senses into more groups, sense of air pressure which by the way is how blood pressure is monitored , electromagnetic fields, chemoreception the glandular sense the gentleman referred to above etc. Six main senses, 12 visceral senses, and endless debate beyond that. The non-skin external senses are pretty straightforward: This last includes two pieces: Since gravity is itself a form of acceleration, I think of the whole sense as the sense of acceleration. So this is five mostly straightforward senses. Balance is something the brain does with mostly sight and vestibular sensation. Proprioception is something the brain does with mostly the muscle senses and vestibular sensation, though it also lets the skin senses and sight pitch in if they can. Thermoception is, among other things, a skin sense. There are four kinds of receptors we ordinarily understand as "touch" even by narrow definitions. Two of these are also found in the muscles, ligaments, and joints. Meanwhile, we have two very different kinds of receptor for heat and cold. One responds to heat; the other responds mostly to cold, but also to some levels of heat. These may or may not be processed separately in the brain; and I have no idea whether, or to what extent, they feed into the somatosensory cortex, the touch map of the body, which is what I came to this page hoping to find out. So is thermoception one sense, two separate receptors, perhaps separate brain processing , or zero part of touch because it hits the somatosensory cortex -- if it does? For example, the top level of hearing according to hearing specialists is the "threshold of pain". Is this kind of pain the same as the kind we sense with our skin? How about the pain from overly bright light? And the fun only continues. The article blithely asserts that external thermoception works very differently from internal thermoregulation. But does external thermoception work differently from stomach thermoception? Yes, our stomachs sense heat and cold. Once you get inside the body, also, things get very confused with the chemical senses. Many of our glands can sense when a particular chemical is low or high in a particular fluid. Is each of these a separate sense? I have no idea how you get to 21 senses, but if those are all external senses, then whatever classification it is, ought to include, for example, each glandular sensor as a sense, and probably ends up somewhere in the hundreds.

Chapter 4 : Proprioception: The Sense Within | The Scientist Magazine®

Five senses corresponding to five sense organs of human body, namely: eye, ear, nose, tongue, skin. There is no specific order, so you can't label anyone as first or fifth. The paranormal sensations which are experienced through the function of stated five sense organs are attributed as sixth sense.

Noses smelling have sensors which detect chemicals say kem-i-kals which make up a smell. Your nose tells you more about this and other fascinating things nasal! Tongues tasting also have chemical sensors to give a sense of taste. Look at Your terrific tongue to find out more. But there are also other sensors: Sensors in the muscles and joints tell you where the different parts of the body are in relation to each other. Try closing your eyes and then put the tips of your fingers together. Sensors in your bladder pass on the message to say when you need to do a wee. Sensors let you know when you feel hungry or thirsty. Have you noticed how animals seem to sense when there is a storm coming? Some people seem to be able to sense weather changes too. Some people seem to sense danger before something happens. Some people sense when someone is looking at them. Twins often seem to have an extra sense which links them very closely with their other twin. Other people, especially mothers and teachers, seem to sense when you are about to do or have done something which was probably not a good idea!! I love to hear rain. I love to stroke animals I hate to see dog poo in the lane. Hate the feel of pain And of freezing rain. I love to smell lavender But hate the feel of mud. Georgia I love to hear trees rustling. I love to feel water trickling on my hand. I hate to taste burnt food. Jeffrey Dr Kate says Sometimes people are born without one or more of their senses, or they may lose a sense like seeing or hearing. It often seems like the remaining senses develop more to try and make up for the missing sense. For example a sight impaired person may develop extraordinary senses of hearing and touch, as well as memory skills. Try something like this. I love to feelâ€¦!

Chapter 5 : How Our Sense Of Touch Affects Everything We Do | HuffPost

Sight, Sound, Smell, Taste, and Touch: How the Human Body Receives Sensory Information. The nervous system must receive and process information about the world outside in order to react, communicate, and keep the body healthy and safe.

Living Fully in Our Bodies When you get into the body, it keeps you true. Wendell Berry There is deep wisdom within our very flesh, if we can only come to our senses and feel it. Behnke The body is a multilingual being. It speaks through its color and its temperature, the flush of recognition, the glow of love, the ash of pain, the heat of arousal, the coldness of nonconviction. It speaks through the leaping of the heart, the falling of the spirits, the pit at the center, and rising hope. Rollo May The body always leads us home. Pat Ogden The body never lies. Martha Graham Thinking and Feeling with the Body My primary process of perceiving is muscular and visual. Albert Einstein Great ideas originate in the muscles. Thomas Edison Often the hands will solve a mystery that the intellect has struggled with in vain. Samuel Beckett Think with the whole body. Taisen Deshimaru For every thought supported by feeling, there is a muscle change. Mabel Ellsworth Todd Ultimately, we become aware of most of what is going on within us mainly through the muscles. Carol Welch Trying out new ways of using your body in handling various situations breaks you free from old ways of thinking and being. Mirka Knaster Emotional release and muscular release are interdependent - one does not occur without the other. Elaine Mayland Awakening the Soul Through the Body In our bodies, in this moment, there live the seed impulses of the change and spiritual growth we seek, and to awaken them we must bring our awareness into the body, into the here and now. Pat Ogden Here in this body are the sacred rivers: I have not encountered another temple as blissful as my own body. William Blake Nothing can cure the soul but the senses, just as nothing can cure the senses but the soul. Oscar Wilde Our body is precious. It is our vehicle for awakening. Treat it with care. Buddha Take care of your body with steadfast fidelity. The soul must see through these eyes alone, and if they are dim, the whole world is clouded. Johann Wolfgang Von Goethe Complete health and awakening are really the same. Tarthang Tulka Staying Healthy Through Awareness The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease. Thomas Edison The natural healing force within each one of us is the greatest force in getting well. Hippocrates Our own body is the best health system we have--if we know how to listen to it. Mirka Knaster Your emotions are your inner guidance system. They alone will let you know whether you are living in an environment of biochemical health or in an environment of biochemical distress. Understanding how your thoughts and your emotions affect every single hormone and cell in your body, and knowing how to change them in a way that is health-enhancing, gives you access to the most powerful and empowering health-creating secret on earth. Christiane Northrup The secret of health for both mind and body is not to mourn for the past, not to worry about the future, nor to anticipate troubles, but to live in the present moment wisely and earnestly. Buddha Polish the heart, free the six senses and let them function without obstruction, and your entire body will glow. Morihei Ueshiba Connecting With Our Bodies To connect with our bodies is to learn to trust ourselves, and from that comes power. Mirka Knaster Being in touch with our bodies, or more accurately, being our bodies, is how we know what is true. Harriet Goldhor Lerner The deeper we live the life of our bodies, the deeper is the upwelling of love. Stanley Keleman Be strong then, and enter into your own body; there you have a solid place for your feet. Think about it carefully! Kabir Stay centered, do not overstretch. Extend from your center, return to your center. Morihei Ueshiba When you stand with your two feet on the ground, you will always keep your balance.

Chapter 6 : BBC - Future - Psychology: How many senses do we have?

A children's educational website with educational information on how your body works both inside and outside Your Five Senses - Explore Your Body - Microbe Magic You have 5 senses - sight, smell, sound, taste and touch.

But touch, which is the interface between our bodies and the outside world, does a lot more than bring us sensual pleasure. Often ignored when we talk about our fundamental senses, the sensation of touch is a fundamental part of our daily experience, influencing what we buy, who we love and even how we heal. We use this sense to gather information about our surroundings and as a means of establishing trust and social bonds with other people. In his book, *Touch*: David Linden convincingly argues that the "genes, cells and neural circuits involved in the sense of touch have been crucial to creating our unique human experience. Here are six things you should know about the latest neuroscience of touch. There are two pathways in the brain for processing touch. The human brain has evolved to have two distinct but parallel pathways for processing touch information. The first is a sensory pathway, which gives us the facts about touch -- like vibration, pressure, location and fine texture. Linden explained that part of the sensory pathway is a brain region called the primary somatosensory cortex, which is the first region to be hit by the experience of touch. This pathway activates brain regions associated with social bonding, pleasure and pain centers. The emotional context changes our physical experience of touch. As we all know well, touch can actually feel physically different based on the social context of the encounter. Consider the example of an arm around the shoulder, said Linden: So too, can the pleasurable aspect of touch be removed from the actual sensation. Or, you could produce the pleasurable aspect of orgasm without any tactile aspect associated with it. Touch is important for child development. Drastic examples of young children who have been deprived of touch and have suffered as a result have shown the devastating consequences of touch deprivation. When it comes to social situations, the primary purpose of touch is to forge trust and cooperation. Friendly touch communicates to someone, You can trust me. Research has found that players on sports teams that have lots of celebratory touch tend to perform better, while studies have also shown that in a romantic relationship, touch both sexual and non-sexual is enormously important. The touch stimulates C-fibers a type of nerve fiber which Linden refers to as "caress sensors" that convey information to the brain about interpersonal touch -- specifically, the light caress. These fibers send signals to the posterior insula a brain area involved in perception and motor control, which produces a soft, pleasant sensation. Our sense of touch deteriorates as we get older. Unfortunately, like eyesight and hearing, our sense of touch is vulnerable to the effects of age. The touch sense steadily deteriorates as we get older, starting around the age of 40. Every year, we lose around one percent of our tactile sense. Another reason is that the insulating material, called myelin, that coats the fast-conducting nerve fibers and makes them project quickly to the brain breaks down, so the information gets to your brain more slowly. One of the ways for the elderly to combat falling is actually to go barefoot so that they have a better sense of the ground, Linden explains. Touch can be therapeutic. A large body of research -- much of which has been conducted by Tiffany Field of the Touch Research Institute at the University of Miami -- suggests that therapeutic massage can be useful for a number of physical and mental ailments. These therapeutic applications include pain relief, addiction recovery, and maintaining emotional equilibrium, cognitive function and mobility among an aging population, Linden suggested. Some research has also suggested that massage may be an effective way to treat anxiety, insomnia, headaches and digestive problems.

Chapter 7 : All About Your Senses: Experiments to Try

Five Senses: Facts. See the Top 10 Questions. Our skin is the largest organ in our body and contains the most nerve endings. Here's a diagram of the skin.

Buffer Shares Affiliate and Referral links are used below to promote products I love and recommend. I receive a commission on any purchases made through these links. Please see my disclosure policy for more details. The Sensory Processing System I am personally fascinated with how the brain works and the sensory system. Whenever there is a continuing education class in my area on the sensory system and sensory processing I always try to attend and I ALWAYS learn something new. Which is why I am sharing this post with you today. It is the neurological wiring by which we perceive and process sensory information coming from outside and even inside our bodies. When a person or child has a sensory overload or low arousal, this is often referred to as sensory processing difficulties or sensory processing disorder, once diagnosed by a doctor. So what are the 8 senses? What Are the 8 Senses? Anything you touch or feel is part of the tactile sensory system. A typical person is able to use smooth and precise eye movements to scan and visually assess their environment. When we eat we smell something first, if it smells good we are more likely to try it. If it smells bad that sends a warning that we may not like it OR that it is dangerous for us to eat. Smell travels directly to the emotional brain or the limbic system which is often why our emotions are tied to smells and foods. The proprioception system allows you to know where your body parts are and what they are doing without necessarily looking at them. Are you sitting, standing, lying down, upside down, spinning, standing still etc? It is often referred to as the internal GPS system of your body. It is also very closely linked to the proprioception, auditory, and visual senses of the body. So that is why when a person or child has sensory processing challenges, the Occupational Therapist will often start with addressing any issues they have with their vestibular system. Interoception " This is the one that I honestly had no clue about, but made complete sense pun intended, haha when I heard about it. This sense is all about the physiological condition of your body. Are you hungry, thirsty? Do you need to use the bathroom? Is your heart racing or at a normal pace? So when one or more of these systems are not functioning properly, you can see how it would affect that person. However, if someone is over or under-responsive to sensory input in ANY of these sensory systems, that is often when sensory processing challenges and difficulties are noticeable. Now does that mean that just because you are extra sensitive in one or more of these senses that you have a sensory processing disorder? We all have different things with each sense that we can tolerate and not tolerate. If a sensory difference or challenge is adversely affecting your daily life or routine, that is often when seeking outside therapies and strategies are helpful. A series I wrote on behavior vs. A Handbook for Parents and Educators. For more resources like this one, check out the links below.

Chapter 8 : What are the 8 Senses? Sensory Processing Explained

The five basic senses—sight, hearing, smell, taste, and touch—enable us to perceive the world around us. But what about sensations generated by the actions of our own bodies? As Waterman's case demonstrates, the ability to sense our bodies is critical for telling us where we are in our.

Sense of agency The sense of agency refers to the subjective feeling of having chosen a particular action. Some conditions, such as schizophrenia, can lead to a loss of this sense, causing a person to feel like a machine or even leading to delusions of being controlled from some outside source. The opposite extreme occurs too, with some people experiencing everything in their environment as if they had decided that it would happen. Through methods such as the Libet experiment, a gap of half a second or more can be detected from the time when there are detectable neurological signs of a decision having been made to the time when the subject actually becomes conscious of the decision. There are also experiments in which an illusion of agency is induced in psychologically normal subjects. In Wegner and Wheatley, subjects were given instructions to move a mouse around a scene and point to an image about once every thirty seconds. However, a second person—acting as a test subject but actually a confederate—had their hand on the mouse at the same time, and controlled some of the movement. Experimenters were able to arrange for subjects to perceive certain "forced stops" as if they were their own choice. The temporal lobe, in particular the perirhinal cortex, responds differently to stimuli which feel novel than to things which feel familiar. Firing rates in the perirhinal cortex are connected with the sense of familiarity in humans and other mammals. Recent studies on lesions in the area concluded that rats with a damaged perirhinal cortex were still more interested in exploring when novel objects were present, but seemed unable to tell novel objects from familiar ones—they examined both equally. Thus, other brain regions are involved with noticing unfamiliarity, but the perirhinal cortex is needed to associate the feeling with a specific source. However, the mechanisms and capabilities vary widely.

Smell [edit] Most non-human mammals have a much keener sense of smell than humans, although the mechanism is similar. They follow the nostril that first detected the smell.

Vomeronasal organ [edit] Many animals, including salamanders, reptiles, and mammals, have a vomeronasal organ [30] that is connected with the mouth cavity. In mammals it is mainly used to detect pheromones of marked territory, trails, and sexual state. Reptiles like snakes and monitor lizards make extensive use of it as a smelling organ by transferring scent molecules to the vomeronasal organ with the tips of the forked tongue. In reptiles the vomeronasal organ is commonly referred to as Jacobson's organ. In mammals, it is often associated with a special behavior called flehmen characterized by upturning of the lips. The organ is vestigial in humans, because associated neurons have not been found that give any sensory input in humans.

Catfish have taste organs across their entire bodies, and can taste anything they touch, including chemicals in the water.

Pit vipers, pythons and some boas have organs that allow them to detect infrared light, such that these snakes are able to sense the body heat of their prey. The common vampire bat may also have an infrared sensor on its nose.

Bees and dragonflies [34] are also able to see in the ultraviolet. Mantis shrimps can perceive both polarized light and multispectral images and have twelve distinct kinds of color receptors, unlike humans which have three kinds and most mammals which have two kinds. Researchers believe that opsins in the skin can sense different wavelengths of light and help the creatures choose a coloration that camouflages them, in addition to light input from the eyes.

Sensing gravity [edit] Some plants such as mustard have genes that are necessary for the plant to sense the direction of gravity. If these genes are disabled by a mutation, a plant cannot grow upright.

Animal echolocation Certain animals, including bats and cetaceans, have the ability to determine orientation to other objects through interpretation of reflected sound like sonar. They most often use this to navigate through poor lighting conditions or to identify and track prey. There is currently an uncertainty whether this is simply an extremely developed post-sensory interpretation of auditory perceptions or it actually constitutes a separate sense. Resolution of the issue will require brain scans of animals while they actually perform echolocation, a task that has proven difficult in practice. Blind people report they are able to navigate and in some cases identify an object by interpreting reflected sounds especially their own footsteps, a phenomenon known as human echolocation.

Electroreception[edit] Electroreception or electroception is the ability to detect electric fields. Several species of fish, sharks , and rays have the capacity to sense changes in electric fields in their immediate vicinity. For cartilaginous fish this occurs through a specialized organ called the Ampullae of Lorenzini. Some fish passively sense changing nearby electric fields; some generate their own weak electric fields, and sense the pattern of field potentials over their body surface; and some use these electric field generating and sensing capacities for social communication. The only orders of mammals that are known to demonstrate electroception are the dolphin and monotreme orders. Among these mammals, the platypus [40] has the most acute sense of electroception. A dolphin can detect electric fields in water using electroreceptors in vibrissal crypts arrayed in pairs on its snout and which evolved from whisker motion sensors. This permits the dolphin to locate prey from the seafloor where sediment limits visibility and echolocation. An electrically charged balloon, for instance, will exert a force on human arm hairs, which can be felt through tactition and identified as coming from a static charge and not from wind or the like. This is not electroreception, as it is a post-sensory cognitive action. Directional awareness is most commonly observed in birds , which rely on their magnetic sense to navigate during migration. Cattle make use of magnetoception to align themselves in a north-south direction.

Chapter 9 : Your Five Senses - Explore Your Body - Microbe Magic

The sense organs – eyes, ears, tongue, skin, and nose – help to protect the body. The human sense organs contain receptors that relay information through sensory neurons to the appropriate places within the nervous system. Each sense organ contains different receptors. General receptors are.

These myths crop up every now and then look at the premise of the Lucy movie this summer , but they are quickly shot down by those in the know. In contrast to these enduring stories, other misconceptions are stealthier and slip beneath the radar unrecognised. One of these is the idea that the human brain is served by five senses. This belief is so ingrained that even the scientifically literate will treat it as taken-for-granted common knowledge. Today, the five senses are considered such an elementary truth that it is sometimes used as a point of consensus before writers embark on more mysterious or contentious topics. One, somewhat vague, definition might argue that a human sense is simply a unique way for the brain to receive information about the world and the body. If that is the case, then we can claim with confidence that there are certainly more than five human senses. First consider the senses that relate to the position of our bodies. Close your eyes, and then touch your right forefinger to your left elbow tip. How did you do it? Somehow you knew where the end of your finger was and you also knew the position of your left elbow. Proprioception is possible thanks to receptors in our muscles known as spindles, which tell the brain about the current length and stretch of the muscles. View image of Getty Images Credit: Getty Images Now imagine you are blindfolded and I tilted you forwards slowly. This is thanks to the fluid-filled vestibular system in your inner ear, which helps us keep balance. This system also gives us our experience of acceleration through space, and it links up with the eyes, making it possible to cancel out our own motion. There are also numerous senses providing us with information about the inner state of our bodies. The most obvious of these are hunger and thirst, inner body pain, and the need to empty the bladder or bowel. Less obvious and less available to conscious awareness are incoming signals about blood pressure, the pH level of the cerebrospinal fluid, plus many more. Some might take that definition further, to argue that the senses should be defined by the types of receptors we have; a different sensor means a different sense. If that were the case, then even well-known senses quickly split into different varieties. This sensation would be distinct from the mere touch of a plastic cube, say. Alongside temperature-sensitive receptors, packed in our skin we also have receptors dedicated to mechanical pressure, pain known as nociceptors and itch pruritic receptors. Should each one be counted as a different sense? Getty Images At the other extreme, you could restrict our definition of discrete sense to the physical categories of incoming information. We can simplify the human senses down to just three – mechanical which takes in touch, hearing and proprioception ; chemical including taste, smell and internal senses ; and light. Yet another way of approaching this issue is to think not about the category of incoming information or the perceptual experience, but about how incoming sensory information is used. A great example is the human capacity for echo-location. Human echo-location works by a person emitting a clicking sound with the tongue and listening for how it rebounds off the immediate environment. In the USA there is even a remarkable team of blind cyclists – Team Bat – led by Daniel Kisch, who use echo-location to go mountain biking see www.teambat.com. This ability depends on the traditional sense of hearing, but the perceptual experience and function is more akin to vision. For these reasons, some consider it a separate sense. View image of This video is no longer available As you can see, there is no single, logical way to define the senses. In some ways, it might make little sense to draw divisions between them at all – considering that they often seem to blend together; the colour of food – and even the sounds of a restaurant – can influence taste, for instance. Understanding these relationships is important when studying conditions like synaesthesia and could even shed light on consciousness itself. Indeed, once you start thinking about all the different kinds of information reaching the human brain, you might even find that you develop a brand new sense – a radar-like sensitivity to some of the other misconceptions regarding the way the brain experiences the world.