V. 10. VENUS FLYTRAP pdf

1: Venus Flytrap, Venus Flytrap Suppliers and Manufacturers at www.enganchecubano.com

These plants are very mature specimens that are from 7 to 10 years old. What that means is that these Venus flytraps will produce the largest traps off all of our Venus flytraps. The rule of thumb is, the older the plants the larger the traps will grow.

Another motivation was racial, as he had allegedly heard parents of other players disparage the Williams sisters during tournaments. Playing style[edit] This section of a biography of a living person needs additional citations for verification. Please help by adding reliable sources. Contentious material about living persons that is unsourced or poorly sourced must be removed immediately, especially if potentially libelous or harmful. October Learn how and when to remove this template message Williams is a very powerful baseliner who also has an attacking all-court game. Her game is well adapted to grass, where she feels most comfortable, which is reflected in her five Wimbledon singles titles. She has developed into a skilful volleyer who uses her long arm span 1. August Learn how and when to remove this template message â€" Professional debut[edit] Williams turned professional on October 31, , at the age of fourteen. That was the only tournament Williams played in In , Williams played three more events as a wild card, falling in the first round of the tournament in Los Angeles and the tournament in Toronto but reaching the quarterfinals of the tournament in Oakland, defeating No. Williams played five events in , falling in the first round four times but reaching the third round in Los Angeles, before losing to No. Early success[edit] Debut Grand Slam singles final[edit] Williams played 15 tour events in , including five Tier I tournaments. She then lost in the quarterfinals to No. Her ranking broke into the top on April 14, She made her debut in the main draw of a Grand Slam tournament at the French Open, reaching the second round before losing to Nathalie Tauziat. She then lost in the first round of Wimbledon to Magdalena Grzybowska. Richard Williams , her father, later claimed that this incident was racially motivated. On September 8, , her ranking broke into the top 50 for the first time. She ended the year ranked No. Williams eventually lost in the quarterfinals to No. Three weeks later, Williams defeated No. Williams then defeated Joannette Kruger in the final to win the first singles title of her career. On March 30, , her ranking broke into the top 10 for the first time, at No. Williams played only one tournament on clay before the French Open. Williams lost again to Hingis in the quarterfinals of the French Open. Williams lost her first match at the Direct Line International Championships in Eastbourne on grass before losing to No. On July 27, , her ranking rose to No. Williams played three tournaments during the North American summer hard court season. Patellar tendonitis in her left knee caused her to retire from her quarterfinal match at the tournament in San Diego while trailing Mary Pierce 4â€"0 in the third set. Williams played four tournaments in the remainder of She had earned enough points during the year to participate in the year-ending Chase Championship but withdrew from the tournament because of tendonitis in her knee. She finished the year ranked No. Both titles came with sister Serena, becoming only the third pair of sisters to win a WTA tour doubles title. However, she rebounded at the Faber Grand Prix in Hanover , defeating Graf for the first time in the semifinals before losing the final to No. Williams then successfully defended her titles in both Oklahoma City and Key Biscayne. Williams played four clay court events during the spring. Three weeks later, however, she won her first title on clay at the Betty Barclay Cup in Hamburg , defeating Mary Pierce in the final. At the French Open , she extended her winning streak to 22 matches before losing in the fourth round to No. At the Wimbledon Championships , Williams defeated No. Williams rebounded in the summer when she won two Fed Cup matches against Italy and lost in the final of the Bank of the West Classic in Stanford to No. On August 30, , her world ranking reached third for the first time. Williams won her sixth title of the year at the Tier I event in Zurich, defeating No. Four weeks later, she lost to Davenport in the semifinals of the tournament in Philadelphia. Making her debut at the year-ending Chase Championships, Williams lost to Hingis in the semifinals. Williams sisters domination[edit] She returned to the tour during the European clay court season. Although she had won only two of her four matches before the French Open , she was seeded fourth there. Williams then won 35 consecutive singles matches and six tournaments. She won her first Grand Slam singles title at Wimbledon, defeating No. Davenport eventually snapped her winning streak in October

in the final of the Linz Open. Williams did not play a tournament the rest of the year because of anemia. Williams also reached the semifinals of the Tier I Tennis Masters Series tournament in Indian Wells, California , where she controversially defaulted her match with sister Serena just before the match started. Williams had been suffering from knee tendinitis throughout the tournament and eventually this prevented her from playing. The following day, Williams and her father Richard were booed as they made their way to their seats to watch the final. Due to this, neither Williams sister entered the tournament for 14 years, [26] with Serena entering in after appeals for forgiveness from the event and the WTA Tour. She defeated Hingis in the semifinals and No. Because of this victory, her ranking rose to a career high of No. This was only the second time that she had lost in the first round of a Grand Slam singles tournament. During the North American summer hard court season, Williams won for the second consecutive year the tournaments in San Diego, defeating Seles in the final, and in New Haven, defeating Davenport in the final. Williams also won the US Open singles title for the second consecutive year, without dropping a set. In the quarterfinals, she beat fifth-seeded Clijsters, followed by a semifinal victory over No. She played Serena in the final, which was the first Grand Slam singles final contested by two sisters during the open era. Venus won the match and her fourth Grand Slam singles title. However, she then lost for the first time in her career to Seles in the quarterfinals of the Australian Open. As a result of her strong start to the season, Williams assumed the world No. Williams was the first African-American woman ever to hold the ranking. She held it for just three weeks before surrendering it back to Capriati. Williams failed to defend her title in Miami after losing in the semifinals to Serena. A week after winning that tournament, she once again replaced Capriati as the No. During those three weeks, Williams had made the final in Hamburg, defeating Hingis in the semifinals before losing to Clijsters in the final. Seeded second at the French Open , Williams defeated former champion Seles to reach the semifinals for the first time. Williams once again replaced Capriati as the No. As the top seed at Wimbledon , Williams defeated Henin in the semifinals to make the final for the third consecutive year. However, there, she lost to Serena. This result meant Serena replaced Venus as the No. Williams won the titles in San Diego and New Haven for the third consecutive year, defeating Davenport and Dokic to win the former and defeating Davenport in the final of the latter. Playing Serena for their third consecutive Grand Slam final, Serena won once again. After that, Williams played just four more matches during the season. She reached the semifinals at the year-ending Sanex Championships after defeating Seles in the quarterfinals, but she then was forced to retire against Clijsters due to injury. Williams finished the year ranked No. Injuries and losses[edit] Australian Open final and injuries[edit] Williams started by defeating fifth seed Justine Henin to make the final of the Australian Open for the first time. In the final, however, she lost to sister Serena. This marked the first time in the open era that the same two players had met in four consecutive Grand Slam finals. However, shortly afterwards, she began to struggle with injury. She then suffered her earliest exit at a Grand Slam tournament in two years when she lost in the fourth round of the French Open to Vera Zvonareva. At Wimbledon , Williams was seeded fourth. Williams defeated former champion Lindsay Davenport in the quarterfinals and Kim Clijsters in the semifinals to advance to her fourth consecutive Wimbledon final, where she lost again to sister Serena. While she was recovering from the injury, her sister Yetunde Price was murdered. It was the first time in nearly six years that she had dropped out of the top Tough losses and further injuries[edit] In , Williams came back to the tour suffering inconsistent results. As the third seed because of a protected ranking, she reached the third round of the Australian Open, where she lost to Lisa Raymond. She then lost in the quarterfinals of her next three tournaments. Williams began to find her form at the beginning of the clay-court season. She then withdrew from that match against Mauresmo due to injury. Going into the French Open , Williams had the best clay-court record among the women and was among the favorites to win the title; however, after making the quarterfinals to extend her winning streak on the surface to 19 matches, she lost to eventual champion Anastasia Myskina. Despite her defeat, she re-entered the top

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2: Bouldering in Venus Flytrap Stone, Grand Junction Area

The Venus flytrap (also Venus's flytrap or Venus' flytrap), Dionaea muscipula, is a carnivorous plant native to subtropical wetlands on the East Coast of the United States in North Carolina and.

It grasps its victims, mainly insects and arachnid, with a trapping arrangement fashioned by the terminal section of each leaf of the plant, triggered by minute hairs that exist on their internal surfaces. Description With a tiny structure, the Venus flytrap has a rosette formed by 4- 7 leaves, arising from a small bulb-like stem that is subterranean. This is the best way to portray the plant. Each stem attains an utmost size, varying from 3 to 10 cm, depending on the season. You can find longer leaves having strong traps typically formed after flowering. A flytrap having over seven leaves, form colonies, created by rosettes circular collection of leaves, wherein all the leaves have the same height that have their divisions under the ground. Two sections, one flat and the other heart-shaped form the leaf blades. Prey Selectivity Carnivorous plants usually survive on specific prey. They base their selection of victims on the available prey and the nature of trap employed by the organism. The Venus flytrap restricts its victims to spiders, beetles, and other swarming arthropods. Mechanism of Trapping The Venus flytrap is one of a very small group of plants capable of rapid movement. The trap employed by flytrap Venus is similar to the traps employed by the Telegraph plant, Mimosa, bladderworts and sundews. With the help of its trapping mechanism, the Venus flytrap catches its prey. The leaf blade has two sections; one is flat while the other hangs from the midriff as a heart-shaped petiole, making real leaf as the trap. The pigments are on the top surface of these lobes and its edges exude mucilage. The arrangement for trapping trips as the prey meets any one of the three trichomes that have a hair like construction that you can find on the surface of the lobe surfaces. The trapping arrangement is highly sensitive and can make out between non-food items and live prey. As a prey strokes two-trigger hairs in sequence within a gap of twenty seconds or strokes one hair twice in quick succession, the trap lobes shut instantaneously. Digestion The moving and trapped prey will arouse the lobe insides to enhance their growth response, forcing the lobe edges to come closer and hermetically seal the trap. Simultaneously a stomach forms, and here, secreting the enzymes from the glands and the lobes facilitate the digestion process. Habitat Surviving on wet peaty and sandy soils, you normally find these Venus flytraps growing in environments like the savannas that are low on phosphorus and nitrogen. Tips for Domestic Cultivation Most domestic growers treat the Venus flytraps as an encouraging species to cultivate at home, but these plants sometimes are not easy to grow. Most successful growers have achieved success only by replicating the conditions to those prevailing in their natural habitat. Substrate Good acidic soil with drainage proves ideal for these Venus flytraps. Make sure never to add fertilizers, but add a little lime to the soil. Light Though bright light is more compatible to Venus Flytraps, they can manage well in partial shade as well. If you are using a glass for a case, make sure that you do not expose them to full sunlight in summer, to avoid them from burning up. When you use artificial fluorescent lights, keep them a safe distance of about inches away from the flytraps. Long spindly leaves and inadequate pink interior remind us that their sunlight quotient is poor. Humidity Environmental humidity, moist soil levels and preventing the plants to grow in standing water are not good for the plants. Make sure also that you use pots with drainage holes, and place a layer of gravel in the substrate to facilitate draining. Good air circulation keeps the plants healthy, and use distilled water to prevent the ill effects of mineral and chemical contaminated water. Food for Venus Flytraps The Venus flytrap eats only live food, including flies and other small insects. Dead animals are of no use, because the trap cannot consume and digest if it is not moving inside the trap. Moreover, you should ensure that the insects would fit comfortably in the trap. For convenience, grow the Venus Flytraps inside a glass terrarium, and release the live insects inside the tank with a closed lid, for them to attract and consume the prey. Our articles are free for you to copy and distribute. Make sure to give www.

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3: Carnivorous Plants for sale | eBay

Basically how the first Venus fly trap happened Music eevee - house of memories.

Many of these natural molecules modulate mitogenic signals involved in cell survival, apoptosis, cell cycle regulation, angiogenesis, or on processes involved in the development of metastases occur naturally, especially in fruits and vegetables bur also in non-comestible plants. Carnivorous plants including the Venus flytrap Dionaea muscipula Solander ex Ellis are much less investigated, but appear to contain a wealth of potent bioactive secondary metabolites. Aim of this review is to give insight into molecular mechanisms triggered by compounds isolated from these interesting plants with either therapeutic or chemopreventive potential. Introduction Natural products derived from plants, animals, and microorganisms have traditionally been the main source of active medicinal compounds without a deep understanding of their mechanism of action. Synthesized by all living kingdoms Archae, Bacteria, Protisae, Plantae, Fungi, and Animalia , these non-essential metabolites are different depending on the species and are classified according to their method of synthesis. Their level of synthesis can also depend on the physiological and the developmental stage of the organism but also environmental factors like the soil, climate, or weather. Synthesis of secondary metabolites can be induced after stimulation by stressors from diverse origins. Originally isolated from plants, recent researches have shown that some secondary metabolites are synthesized by symbiotic organisms like bacteria and not by the host organisms themselves and that other have symbiotic origins. The role of secondary metabolites is to ensure the survival of the organism in its environment. Some allow organisms to protect themselves against predators or herbivores, insects, pathogens but also to kill preys like snake and arthropod venoms or against other organisms for access to resources light, water, and nutrients. Other metabolites can help to resist environmental stress drought, nutrient deficiencies , attract pollinating insects by color and odor , or to ensure symbiosis with other organisms. To date, more than , different secondary metabolites have been discovered and described. Some have been diverted from their original use by human and are now used in commercial preparations such as dyes, drugs, or insecticides 6 â€” We can notably mention, flavonoids carrots including chalcones, isothiocyanates cabbage , lycopene tomatoes , indoles, organosulfides garlic , and polyphenols curcumin 13 â€” Many compounds can also be found in food preparations made with fruits or vegetables like resveratrol from red wine 20 â€” 22 or catechins and procyanidins and polyphenols from cocoa 23 , 24 or quercetin and kaempferol from honey The underwater world is also rich in bioactive molecules with chemopreventive and anti-tumor potential. Among these secondary metabolites discovered in animal, fungi, micro-organism, or marine plants we can mention, for example heteronemin and hemiasterlin sponges , kahalalide F. The Venus Flytrap Dionaea muscipula Solander ex Ellis Different populations used carnivorous plants for hundreds of years in traditional medicine all around the World. In Europe and North America, butterworts Pinguicula vulgaris, Pinguicula alpina were used for the treatment of wounds. Decoctions of butterworts and sundew Drosera rotundifolia were administered for their expectorant and antitussive properties to people with respiratory diseases like pertussis, bronchitis, and asthma but also to treat stomach pain and tuberculosis. Magic properties of sundews were also used for their aphrodisiac effects and their ability to promote delivery. Today this type of plant is used by the modern pharmaceutical industry in the preparation of syrups to treat coughs. The fresh juice secreted by the leaves of sundew is used for local application on warts or bunions 35 â€” In North America, roots and leaves of the purple pitcher plant Sarracenia purpurea were used by the endogenous population for its diuretic and laxative properties and also to treat fever, cough, and diabetes. The plant was also used to treat other infectious diseases like scarlet fever, smallpox, and measles. Plant decoctions were also prescribed to pregnant women to ease labor, to prevent sickness after childbirth and to treat absence of menstrual cycle 35 â€” 37 , 39 , In South-East Asia and in India, natives from local tribes used the pitcher plant Nepenthes khasiana as medical plant. They used juice of young flowers and of unopened pitchers or crushed pitcher powder to treat stomach pain and eye troubles pain, cataract, night blindness , urinary troubles but also skin diseases. Preparations were also given to malaria, leprosy, and cholera patients 41 â€” The Venus flytrap D. To survive in these environments that are

poor in nutrients, it has developed active traps to catch small prey insects, spiders that serve as an additional source of nutrients. The plant catches its prey with nectar produced by glands localized at the inner side of the trap and exposing an UV pattern. When the animal touches a sensitive trigger hair, a movement of ions is generated, producing an osmotic gradient that changes the size and shape of specialized cells of the trap that result in trap closure 47 â€” Once the trap closes on the prey, other glands, also localized at the inner part of the trap, secrete a digestive acid liquid containing a number of enzymes proteases, nucleases, phosphatases, and amylases for digestion of the prey Nutrients are released and then reabsorbed by the plant through both digestive glands and by endocytosis 51 â€” Picture and illustration of Dionaea muscipula Solander ex Ellis. B Picture of Dionaea muscipula trap, sensitive hairs are located on the inner face of the trap. C Picture of D. Secondary Metabolites of Dionaea muscipula Dionaea muscipula was also the subject of modern biomedical research. The analysis of the various different secondary metabolites naphthoquinones, flavonoids, phenolic acids isolated from the plant and identified Table 1 ; Figure 2 revealed that they possess different interesting therapeutic properties 54 â€” Listing of molecules present in Dionaea muscipula Solander ex Ellis. Chemical structures of molecules present in Dionaea muscipula Solander ex Ellis. Compounds are arranged according to the following classification: Naphthoquinones These pigment molecules are widespread in plants, lichens, fungi, and microorganisms and these molecules derive from the phenol synthesis pathway. In plants, they act as bactericide, insecticide, fungicide, and allelopathic agents substances that promote or impede the growth of surrounding organisms 70 , , Plumbagin Plumbagin Figure 2 is a yellow naphthoquinone with anti-bacterial, anti-fungal, anti-inflammatory, and anti-cancer properties. This molecule gets its name from the plant in which it was discovered, Plumbago zeylanica 59 but is very common and is present in others plants like Limonium axillare or walnut trees Juglans sp. The roots of P. In the Venus flytrap, plumbagin provides a protective role against predators and parasites It also has a cytotoxic effect on A cells and is described as being able to disrupt the microtubular network by interacting directly with tubulin It blocks the expression of anti-apoptotic genes including Bcl-2, Bcl-xL, and surviving and genes regulating cell proliferation cyclin D1 and angiogenesis like Matrix metalloproteinase 9 MMP-9 or Vascular endothelial growth factor VEGF. In human melanoma A In addition, the authors showed that naphthoquinone activates both JNK and p38 but at the same time inhibits the activity of Akt In vivo experiments performed on mice have shown that plumbagin inhibits the growth of tumors and the number of metastasis by an inhibition of the expression of several markers like MMP-9, 2, and VEGF in ovarian and prostate-cancer cells , Due to its structure, plumbagin is also known as a ROS generator. Analysis of the mechanism triggered by ROS suggests that plumbagin inhibits 1, 4-phosphatidylinositol 5-kinase PI5K expression. Results obtained by molecular docking showed that plumbagin docks into the receptor ligand site of Tumor Necrosis Factor-Related Apoptosis-Inducing Ligand TRAIL -DR 5 complex that contributes to explain triggering of apoptosis via the extrinsic pathway â€” Plumbagin is also known to act as an inhibitor of multidrug resistance-linked ATP-binding cassette drug transporter ABCG2, a protein responsible for the drug efflux in cancer cells Ex vivo and in vitro experiments showed that plumbagin inhibits microtubule polymerization by direct binding to tubulin at the colchicine binding site Plumbagin derivatives Some others plumbagin derived molecules have also been isolated from D. Identified in other plants than D. Recently, diomuscinone has been isolated from Diospyros wallichii 78 but none of these three compounds have been tested to elucidate their biological effects out of the plant. They have many roles in plants like UV sunscreens, messengers, pigments, plant growth factors and protection against fungi, bacteria, insects, and nematodes Ellagic acid Ellagic acid Figure 2 is a polyphenolic molecule synthesized by Venus flytrap and many other plants such as pomegranate Punica granatum , Terminalia chebula fruit yellow myrobalan , berry fruits blueberry, blackberry, and strawberry , Vitis rotundifolia Muscadine grapevine , or black walnut Juglans nigra 57 , 79 â€” By their astringent taste, ellagic acid, and other tannins play a role in plant defense against herbivores and pests as digestibility-reducing compounds , but also as anti-bacterial agent , The compound triggers apoptosis of pancreatic cancer cells by cytochrome c release and activation of caspase-3 Ellagic acid decreases human prostate carcinoma PC3 cells cell growth and viability in a dose-dependent manner and triggers apoptosis. Authors observed poly ADP-ribose polymerase PARP -1 cleavage, decrease of anti-apoptotic Bcl-2 protein and increase of pro-apoptotic Bax

protein and activation of caspase-3, 6, 8, and 9. Gallic acid Gallic acid Figure 2 has been isolated from bitter orange tree flowers Citrus aurantium , Marrubium persicum, yellow myrobalan fruit T. This tannin that can be released by the aerial parts of the plant is a nematicide but possesses also anti-bacterial and anti-fungal properties 88 , , Gallic acid induces cell death by apoptosis in K leading to PARP-1 cleavage, cytochrome c release, and caspase activation. Expression of COX-2, a molecule involved in cancer-related inflammation and progression, is also reduced by gallic acid treatment. Results have been confirmed in nude mice models where gallic acid treatment leads to decreased development of metastasis In vivo experiments using a mouse prostate TRAMP model fed with gallic acid showed inhibition of prostate-cancer growth and progression. Western-blot analysis performed on mice prostate tissues revealed decreased cdc2, Cdk2, Cdk4, and Cdk6 expression as well as a reduction of the proteins cyclin B1 and E Pharmacokinetic studies have shown that gallic acid is rapidly absorbed by the organism, metabolized in different forms after 2 h, and are detected at a micromolar range in plasma, a concentration lower than the concentration used for several biological studies. A study conducted on black tea drinkers showed that after 3 h, the organism eliminates nine different metabolized forms of gallic acid via the urinary tract , Vanillin Vanillin Figure 2 is probably one of the most famous flavor molecules and the most used widely used by food, chemical and perfume industries. Isolated in by Gobley as the main flavor constituent of vanilla Vanilla planifolia , but also present in other plants potatoes, Ficus microcarpa 83 , 93 , 94 , vanillin is today mainly synthesized or produced by chemical or biotechnological methods using fungi or bacteria â€” In addition to being a flavor molecule, vanillin exerts anti-fungal, and anti-bacterial properties , At non-toxic concentrations, vanillin inhibits growth of mammary adenocarcinoma cell line 4T1 but also decreases MMP-9 activity and thus reduces cell migration and invasion. Similar experiments performed with vanillic acid were not conclusive Vanillin also inhibits cell migration of human lung cancer cells induced by hepatocyte growth factor HGF. Chick chorioallantoic membrane assays showed that vanillin inhibits also angiogenesis Pharmacokinetic studies on rat models demonstrated that vanillin has a relatively good bioavailability 7. Protocatechuic acid Described by many articles as therapeutic molecules active against several diseases, protocatechuic acid Figure 2 was identified in plants like True roselle Hibiscus sabdariffa , Rhizoma homalomenae, Spatholobus suberectus, and Alpinia oxyphylla â€” , Protocatechuic acid inhibits AGS human stomach adenocarcinoma cell migration and proliferation at non-toxic concentrations. Further experiments have shown that pre-treatment of HepG2 with N-acetyl-l-cysteine NAC blocks the cytotoxic effect of protocatechuic acid However it shows antigenotoxic effects against hydrogen peroxide inhibits tumoricidal activity and moreover triggers cell death by apoptosis in HL leukemia cells Caffeic acid Present in Vitis sp. Observations by fluorescence microscopy showed that caffeic acid induces cell death by apoptosis Caffeic acid decreases HCT 15 colon cancer cells in a time dependent manner. It induces cell cycle arrest that leads to accumulation of cells in sub-G1. Inducing also ROS production and reduction of the mitochondrial membrane potential, flow cytometry analysis confirmed cell death by apoptosis Among several small phenolic acids tested for their anti-proliferative effect on T47D human breast cancer cells, caffeic acid exerts is most potent. However it is important to underline that chlorogenic acid Figure 2 , a caffeic acid analog and a Venus flytrap secondary metabolite, can be hydrolyzed to caffeic acid in the intestine and can be well absorbed by intestinal cells. In vitro and in vivo studies showed that in Caco-2 cells, caffeic acid exerts stronger anti-oxidant properties compared to chlorogenic acid. This differential efficiency can be explained by the fact that caffeic acid uptake is superior to chlorogenic acid uptake. Caffeic acid is a molecule known to be metabolized by intestinal bacteria, however studies have shown that caffeic acid can be detected in rat blood 6 h after ingestion together with different other metabolites.

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4: Autumn's Showcase: Amber & Sunlight SEEDS - Fairyland

The Venus flytrap restricts its victims to spiders, beetles, and other swarming arthropods. Actually, the Dionaea diet comprises of 30% spiders, 33% ants, 10% beetles, and 10% grasshoppers, with less than 5% flying insects.

To provide tools to analyze the evolution and functional genomics of D. Using the Oases transcriptome assembler 79,, quality trimmed reads were assembled into 80, cDNA contigs, with an average length of bp and an N50 length of 1, bp. A total of 17, unique proteins were identified, and assigned to Gene Ontology GO and classified into functional categories. A total of 15, full-length cDNA sequences were identified, from which open reading frames were detected in 10, Comparative GO analyses revealed that D. Also, using a single copy sequence PCR-based method, we estimated that the genome size of D. Our genome size estimate and transcriptome analyses will contribute to future research on this fascinating, monotypic species and its heterotrophic adaptations. Attention has focused on the biogeography and phylogenetics of the only two carnivorous species with snap traps, D. The habitat of D. Earlier phylogenetic studies demonstrated that carnivory occurs in several flowering plant lineages [8 , 9], and it was thought that the snap traps of A. However, Cameron et al. While the habitat of A. An understanding of the molecular adaptations to plant carnivory has also been sought via genome size estimates. The biological significance of this massive variation is puzzling. Carnivorous plants are found in at least five, genetically poorly described orders [12]. The lack of molecular tools and genetic information, however, has not hampered phenotypic and ecological studies of the orders with carnivorous members [1 , 13], and comparative genomic analyses may clarify some of their traits. Within the Lentibulariaceae, Greilhuber et al. Also, large variations in ploidy levels and chromosome sizes have been reported within the carnivorous Droseraceae [14]. Thus, the genome contents of carnivorous plants seem to be extremely variable, and the larger genomes tend to have many repetitive sequences and transposable elements [15]. An important complement to genome size analyses comes from transcriptome data. Both transcriptome and genome sequence data are needed to understand the physiological and genetic basis of the snap trap and to identify genes selected during its evolution [16]. To this end, deep sequencing [17 , 18] is beginning to reveal certain aspects of the evolution of carnivory. To date transcriptome data for the bladderwort Utricularia gibba has been published [19]. Furthermore, Srivastava et al. Finally, Schulze et al. Altogether, such studies clarify aspects of the molecular physiology associated with the carnivorous syndrome. In the present study, we sequenced the transcriptome of D. Transcriptome sequences were assembled into contigs and functional analyses performed. From this a large number of transcripts related to catalytic activities were identified. This high-throughput data set is the first available for a member of the largest family of carnivorous plants Droseraceae. Our data provide a public resource for unveiling mechanistic features of the carnivorous syndrome such as attraction, trapping and digestion. Materials and Methods Plant material For nuclear genome estimates, 1 g of freshly harvested flowers, petioles and traps were used from D. The lysate became more viscous as the solution was cooled at room temperature for 10 min before extraction with 1 x volume of The pellet was briefly air-dried at room temperature before being gently dissolved in 1 ml TE pH 7. Due to high absorbance at nm, a second purification was done. The pellet was air-dried for 30 min at room-temperature and resuspended in TE pH 7. DNA purity and concentration were measured on a nanodrop Thermo scientific. For a single extraction, 0. The suspension was then centrifuged for 2 min at 13, RPM to pellet debris, and the supernatant transferred to a new tube. The suspension was extracted with ul chloroform: RNA in the aqueous phase was precipitated overnight with 0. Samples were then pooled in a 1: Following another MinElute step, we indexed 6-bases and amplified the library 10x with Illumina standard primers InPE1. Finally, the library was evaluated by gel electrophoresis and a gel piece containing â€” bp fragments was isolated and QIAquick purified Qiagen. The Oases transcriptome assembly can be found in S1 Table. Primers were designed using Primer3 [35]. Sequences for primers and contigs are in S3 Table. Transcripts for each locus were scanned with InterProScan http: The GO terms associated to the transcriptome contigs were retrieved to describe genes in the categories of cellular components, molecular function and biological process. For comparison of the D. A long unique sequence

with good coverage was chosen for primer design as shown in S4 Table. A total of 81,, single-end bp reads were generated. As shown in Table 1 , the assembly combined the 79,, reads into 80, contigs, with an average length of bp and an N50 length of 1, bp. Table 1 Statistics of transcriptome sequencing and assembly of D.

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5: Top 10 Fascinating Carnivorous Plants - Listverse

The insectivorous Venus flytrap (Dionaea muscipula) is renowned from Darwin's studies of plant carnivory and the origins of www.enganchecubano.com provide tools to analyze the evolution and functional genomics of D.

Received Apr 2; Accepted Jul The use, distribution or reproduction in other forums is permitted, provided the original author s or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms. This article has been cited by other articles in PMC. Many of these natural molecules modulate mitogenic signals involved in cell survival, apoptosis, cell cycle regulation, angiogenesis, or on processes involved in the development of metastases occur naturally, especially in fruits and vegetables bur also in non-comestible plants. Carnivorous plants including the Venus flytrap Dionaea muscipula Solander ex Ellis are much less investigated, but appear to contain a wealth of potent bioactive secondary metabolites. Aim of this review is to give insight into molecular mechanisms triggered by compounds isolated from these interesting plants with either therapeutic or chemopreventive potential. Synthesized by all living kingdoms Archae, Bacteria, Protisae, Plantae, Fungi, and Animalia , these non-essential metabolites are different depending on the species and are classified according to their method of synthesis. Their level of synthesis can also depend on the physiological and the developmental stage of the organism but also environmental factors like the soil, climate, or weather. Synthesis of secondary metabolites can be induced after stimulation by stressors from diverse origins. Originally isolated from plants, recent researches have shown that some secondary metabolites are synthesized by symbiotic organisms like bacteria and not by the host organisms themselves and that other have symbiotic origins. The role of secondary metabolites is to ensure the survival of the organism in its environment. Some allow organisms to protect themselves against predators or herbivores, insects, pathogens but also to kill preys like snake and arthropod venoms or against other organisms for access to resources light, water, and nutrients. Other metabolites can help to resist environmental stress drought, nutrient deficiencies , attract pollinating insects by color and odor , or to ensure symbiosis with other organisms. To date, more than , different secondary metabolites have been discovered and described. Some have been diverted from their original use by human and are now used in commercial preparations such as dyes, drugs, or insecticides 6 â€” , We can notably mention, flavonoids carrots including chalcones, isothiocyanates cabbage , lycopene tomatoes , indoles, organosulfides garlic , and polyphenols curcumin 13 â€” , Many compounds can also be found in food preparations made with fruits or vegetables like resveratrol from red wine 20 â€” , 22 or catechins and procyanidins and polyphenols from cocoa 23 , 24 or quercetin and kaempferol from honey The underwater world is also rich in bioactive molecules with chemopreventive and anti-tumor potential. Among these secondary metabolites discovered in animal, fungi, micro-organism, or marine plants we can mention, for example heteronemin and hemiasterlin sponges , kahalalide F. The Venus Flytrap Dionaea muscipula Solander ex Ellis Different populations used carnivorous plants for hundreds of years in traditional medicine all around the World. In Europe and North America, butterworts Pinguicula vulgaris, Pinguicula alpina were used for the treatment of wounds. Decoctions of butterworts and sundew Drosera rotundifolia were administered for their expectorant and antitussive properties to people with respiratory diseases like pertussis, bronchitis, and asthma but also to treat stomach pain and tuberculosis. Magic properties of sundews were also used for their aphrodisiac effects and their ability to promote delivery. Today this type of plant is used by the modern pharmaceutical industry in the preparation of syrups to treat coughs. The fresh juice secreted by the leaves of sundew is used for local application on warts or bunions 35 â€” , In North America, roots and leaves of the purple pitcher plant Sarracenia purpurea were used by the endogenous population for its diuretic and laxative properties and also to treat fever, cough, and diabetes. The plant was also used to treat other infectious diseases like scarlet fever, smallpox, and measles. Plant decoctions were also prescribed to pregnant women to ease labor, to prevent sickness after childbirth and to treat absence of menstrual cycle 35 â€” , 37 , 39 , In South-East Asia and in India, natives from local tribes used the pitcher plant Nepenthes khasiana as medical plant. They used juice of

young flowers and of unopened pitchers or crushed pitcher powder to treat stomach pain and eye troubles pain, cataract, night blindness , urinary troubles but also skin diseases. Preparations were also given to malaria, leprosy, and cholera patients 41 â€” , The Venus flytrap D. To survive in these environments that are poor in nutrients, it has developed active traps to catch small prey insects, spiders that serve as an additional source of nutrients. The plant catches its prey with nectar produced by glands localized at the inner side of the trap and exposing an UV pattern. When the animal touches a sensitive trigger hair, a movement of ions is generated, producing an osmotic gradient that changes the size and shape of specialized cells of the trap that result in trap closure 47 â€” , Once the trap closes on the prey, other glands, also localized at the inner part of the trap, secrete a digestive acid liquid containing a number of enzymes proteases, nucleases, phosphatases, and amylases for digestion of the prey Nutrients are released and then reabsorbed by the plant through both digestive glands and by endocytosis 51 â€” ,

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6: All About the Venus Fly Trap

A beginner new to Venus Flytraps should be aware that if Venus Flytrap seeds are bought, even with a kit, that it will take at least 2 1/2 to 3 years, assuming it is grown correctly, to reach the size of the Venus Flytraps offered in this listing.

Share11 Shares 1K Out of all the strange plants in the world, who would have thought that you even get flesh eating plants? All carnivorous plants can be found in areas where the soil has very little nutrients. These fascinating plants are categorized as carnivorous as they trap insects and arthropods, produce digestive juices, dissolve the prey and derive some, or most, of their nutrients from this process. After further discoveries and research, it is believed that these carnivorous properties evolved on six separate occasions, from five different orders of flowering plants. These are now presented in over different species of flowering plant. There are five basic trapping mechanisms found in all these plants: I would like to show you a couple of plants, using each mechanism, so that you can also see the differences between different genera. It is also the first plant with a pitfall trap that we will look at. Insects are attracted by colour, smell and a nectar-like secretion on the lip of the pitcher. Slippery footings, aided in at least one species, by a narcotic drug lacing the nectar, causes insects to fall inside where they die and are digested by proteases and other enzymes 9 Nepenthes Nepenthes, tropical pitcher plants or monkey cups, are another genus of carnivorous plants with pitfall traps. Most species of Nepenthes are tall creepers m , with a shallow root system. From the stem you will often see sword like leaves growing, with a tendril often used for climbing protruding from the tip of the leaf. At the end of the tendril, the pitcher forms first as a small bulb, which then expands and forms the cup. The trap contains fluid, produced by the plant, which may be watery ors syrupy and is used to drown and digest the insects. The lower part of the cup contains glands that absorb and distribute nutrients. Most of these plants are small and tend to trap only insects, but some larger species, such as Nepenthes Rafflesiana and Nepenthes Rajah, have been documented to catch small mammals like rats. Genlisea are small herbs with yellow flowers that make use of lobster pot traps Traps that are easy to enter but impossible to exit, like by use of small hairs growing towards the entrance or in this case, the ever forward propelling spiral. These plants have two distinct types of leaves â€” photosynthetic leaves above ground, and specialized underground leaves to attract, trap and digest minute organisms, like protozoans. These underground leaves also perform the duties of roots, like absorbing water and anchorage, as the plant does not have any. These underground leaves form hollow tubes under the ground, these tubes have a forward propelling corkscrew shape, and with the aid of constant water flow, small microbes can make their way into these tubes, but cannot find a way out again. When they reach the correct part of the tubes, they will be digested and absorbed. They grow in bogs and seeps with cold running water and, due to its rarity in the field, it is designated as uncommon. The leaves of the Cobra Lily are bulbous and form a hollow cavity, with a opening situated underneath a swollen, balloon like structure and two pointed leaves hanging off the end like fangs. Unlike most pitcher plants, the Cobra Lilly does not make use of a pitfall trap, but rather lobster pot traps. Once inside, insects are confused by the large light speckles allowed to shine through the plant. When they land, there are thousands of fine dense hairs that grow inwards, they can follow the hairs deeper towards the digestive organs, but they cannot turn around or move backwards to escape. They occur in fresh water and wet soil as terrestrial or aquatic species, on every continent accept Antarctica. They are the only carnivorous plants that make use of bladder traps. Most species have very small traps, in which they can catch only minute prey, like protozoa. Traps can range from 0. The traps have small trigger hairs attached to a trapdoor. The bladder, when set, is under negative pressure in relationship to its surrounding area. When the trigger hairs are tripped, the trap door opens up, sucks in the insect and surrounding water, and closes the door again, all in a matter of 10 thousands of a second. The nutrients from the insects supplement the poor mineral content of the soil. The leaves of the butterwort are succulent and usually bright green or pinkish in color. There are two special types of cells found on the top side of the butterwort leaves. One is known as a penduncular gland, and consists of secretory cells on top of a single stalk cell. These cells produce a mucilaginous secretion which forms visible droplets across the leaves surface, and acts like flypaper. The other cells are called sessile glands. They lie flat on the leaves surface and produce

enzymes like amylase, esterase and protease, which aid in the digesting process. Where some butterwort species are carnivorous all year round, many types form a tight winter rosette, which is not carnivorous. When summer comes, it brings with it new blooms and a new set of carnivorous leaves. These can be found widely spread on every continent accept for Antarctica. Sundews, depending on what species can form either prostrate or upright rosettes, ranging from 1cm to 1m in height, and can live up to 50 years. Sundews are characterized by movable glandular tentacles, topped with sweet sticky secretions. When an insect lands on the sticky tentacles, the plant is able to move more tentacles in the direction of the insect to trap it further. Once trapped, small sessile glands will digest the insect and absorb the resulting nutrients, which can then be used to aid growth. The name rainbow plant comes from the attractive appearance of their mucilage covered leaves in the sun. Even though these plants look similar to the Drosera and Drosophllum, they are not related in any way and can be distinguished by zygomorphic flowers with five curved stamens. The leaves have a round cross section, and they tend to be very elongated and tapered at the end. The surface of the leaves are completely covered in glandular hairs that release a sticky mucilaginous substance, which in turn traps small insects on the leaves or tentacles as a passive flypaper trap. It generally feeds on small aquatic vertebrates, using a trap mechanism called a snap trap. This plant consists mainly of free floating stems, reaching 6 â€” 11cm in length. The traps are attached to petioles, which contain air, and assists in floatation. This is a very fast growing plant and can reach mm per day, in some instances even producing a new whorl every day. As the plant grows from one end, the other end will continuously die off. The traps basically consists of two lobes which fold together to make the snap traps. The openings of the trap point outwards, and are covered in a fine coating of trigger hairs, which will cause the trap to snap shut around any prey that comes too close. The trap closes in only 10 milliseconds, making it one of the fastest examples of plant movement in the animal kingdom. The Venus flytrap is a small plant that has leaves that grow from a short subterranean stem. The leaf blade is divided into two regions: The inner surfaces of these lobes contain a red pigment and the edges secrete mucilage. These lobes exhibit rapid plant movement by snapping shut when special sensory hairs are stimulated. The plant is so advanced that it can tell the difference between live stimulus and non-living stimulus. The lobes snap shut in about 0. They are fringed by stiff thorn-like protrusions or cilia, which mesh together and prevent large prey from escaping.

7: The Carnivorous Plant FAQ

Venus Flytrap Dormancy Remember that during the fall and winter months Venus fly traps are dormant. During this time of year, roughly November through March, they appear much smaller than during the normal growing season.

8: 7 - 10 Year Old Venus flytraps in a pot

The Venus flytrap (D. muscipula Solander ex Ellis), the only species of the genus Dionaea, is a carnivorous plant that grows in marshy areas of North and South Carolina states of the United States (Figure (Figure1). 1). To survive in these environments that are poor in nutrients, it has developed active traps to catch small prey (insects.

9: Dionaea muscipula - Venus Flytrap Painting by Joseph Vega | Saatchi Art

Venus fly trap products are most popular in Western Europe, North America, and Eastern Europe. You can ensure product safety by selecting from certified suppliers, including 5 with Other, 5 with ISO, and 4 with HACCP certification.

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