



**Organizing Committee**

Chief Patron	: Dr. N.M. Veeraiyan Chancellor, Saveetha University
Advisory Committee	: Dr. R. Rajagopal Vice Chancellor, Saveetha University
Organising Chairman	: Dr. M. F. Baig Dean of Faculties, Saveetha Dental College
Joint Secretaries	: Dr. V. Deepak Nallasamy Director of Academics, Saveetha Dental College Mrs. R. V. Geetha
Joint Secretaries	: Mrs. R. V. Geetha Mrs. Anitha Roy Mrs. Vishnu Priya V
Treasurer	: Mr. Yuvaraj Babu
Chairman Scientific and Souvenir Committee	: Dr. M.Nallanayagam
Joint Secretaries	: Mr. N. P. Muralidharan Mrs. T. Lakshmi Dr. Deepa. P Dr. Divya V
Chairman Reception & Registration Committee	: Dr. Gowri Sethu
Joint Secretaries	: Mrs. Anitha Magesh Dr. Lakshmi Priya Miss. Gayathridevi Dr. Bhuvaneshvvari
Chairman Accomodation & Hospitality Committee	: Mrs. M. S. Thenmozhi
Joint Secretaries	: Dr. Selvaraj Dr. Saravana Kumar Miss. P. Sangeetha



**ANATOMY (ORAL PRESENTATIONS)**

**Abstract - Anat - 01**

**Mandibular Incisive Canal**

*Priyanka , Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

The mandibular incisive canal is a bony canal within the anterior mandible that runs bilaterally from the mental foramina usually to the region of the ipsilateral lateral incisor teeth. After ramifying into the mental nerve that exits the foramen of the same name, the inferior alveolar nerve continues anteriorly within the mandibular incisive canal as the incisive nerve, providing innervation to the mandibular first premolar, canine and lateral and central incisors. The mandibular incisive nerve either terminates as nerve endings within the anterior teeth or adjacent bone, or may join nerve endings that enter through the tiny foramen. The incisive canal is typically found within the middle third of the mandible in an apico-coronal dimension, reaching the midline 18% of the time. In human anatomy, the mandibular canal is a canal within the mandible that contains the inferior alveolar nerve, inferior alveolar artery, and inferior alveolar vein. It runs obliquely downward and forward in the ramus, and then horizontally forward in the body, where it is placed under the alveoli and communicates with them by small openings. On arriving at the incisor teeth, it turns back to communicate with the mental foramen, giving off a small canal known as the mandibular incisive canal, which run to the cavities containing the incisor teeth. It carries branches of the inferior alveolar nerve and artery. It is continuous with the mental foramen (which opens onto front of mandible) and mandibular foramen (on medial aspect of ramus). The mandibular canal is fairly close to the apices of the second molar in 50% of the radiographs. In 40%, canal is away from the root apices, and in only 10% of the radiographs the root apices appeared to penetrate the canal. In root canal therapy of the second molar one should be cautious of over extending the reamer or the root canal filling materials because there is a possible risk of inferior alveolar nerve injury.



**Abstract - Anat - 02**

**Anomalies of face development**

*Sushmitha Baskar, Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

The facial prominences are five swellings that appear in the fourth week and come from the first and second pharyngeal arch. They are basically made of mesenchym that comes from the neural crest. Fourth week of development ◦Primordia of the face appear at the cephalic end of the embryo.◦Two nasal placodes cap the bulbous frontal prominence.◦The optic discs appear posterolateral to the frontal prominence.◦Three paired branchial arches have formed.◦The first arches split into maxillary and mandibular prominences. The hyoid arches are the second pair.◦Between the first arches and frontal prominence, the buccopharyngeal membrane becomes fenestrated. Fifth week of development ◦Nasal pits develop in the nasal placodes, and the rims of the placodes differentiate into medial and lateral nasal prominences.◦The lens vesicles invaginate and close within the optic discs.◦The mesenchyme of the mandibular arch fills in across the midline. The caudal end of the medial nasal prominences begins to fuse with the maxillary prominences. At the beginning of the sixth week of development ◦The nasals have shifted to a more ventral, central position◦Growing and shifting subectodermal mesenchyme smooths out the furrows between prominences and arches, and the second arch becomes more massive. ◦Six auricular hillocks, which will become the pinna of the ears, form on the mandibular and hyoid arches. By the end of the sixth week of development ◦Medial and lateral nasal prominences fuse.◦Maxillary prominences begin the formation of the upper jaw.◦The midline approximation of the medial nasal prominences forms the nasal septum. At the beginning of the seventh week of development ◦The tip of the nose is elevated between the medial nasal prominences and is visible in profile. The moment the human embryo is fertilized to the week of the baby's birth is an important period for human appearance in the normally developing embryo. During preimplantation stages, differentiation occurs between precursors of embryonic and extraembryonic structures. A fore-hind axis begins within the inner cell mass at the time of implantation. By the end of the eighth week of gestation, the appearance of the head, face, hands, and feet suggest the embryo's species but is not yet definitive.



**ANATOMY (POSTER PRESENTATIONS)**

**Abstract - Anat - 01**

**Craniosynostosis**

*Naveen and Tineshdayaal Rao,*

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

Craniosynostosis (from *cranio*, cranium; + *syn*, together; + *ostosis* relating to bone) is a condition in which one or more of the fibrous sutures in an infant skull prematurely fuses by turning into bone (ossification),<sup>[1]</sup> thereby changing the growth pattern of the skull.<sup>[2]</sup> Because the skull cannot expand perpendicular to the fused suture, it compensates by growing more in the direction parallel to the closed sutures.<sup>[2]</sup> Sometimes the resulting growth pattern provides the necessary space for the growing brain, but results in an abnormal head shape and abnormal facial features.<sup>[2]</sup> In cases in which the compensation does not effectively provide enough space for the growing brain, craniosynostosis results in increased intracranial pressure leading possibly to visual impairment, sleeping impairment, eating difficulties, or an impairment of mental development combined with a significant reduction in IQ. Although the etiology of craniosynostosis is currently unknown, animal experiments and a recent interest in molecular biology point toward interplay between the dura and the underlying brain. This interaction occurs by means of a local alteration in the expression of transforming growth factor, MSX2, fibroblast growth factor receptor, and twist. The fused suture restricts growth of the calvaria, thus leading to a characteristic deformation, each associated with a different type of craniosynostosis. Uncorrected craniosynostosis leads to a continuing progression of the deformity, and in some cases, an elevation of intracranial pressure. Clinical examination should include not only an examination of the skull but also a general examination to rule out the craniofacial syndromes that accompany craniosynostosis. Treatment for deformational plagiocephaly is conservative when compared with treatment for craniosynostosis, which requires surgery. Appropriate investigations should include genetic screening, radiologic examination with a computerized tomographic scan, and neurodevelopmental analysis. Surgical intervention should be performed during infancy, preferably in the first 6 months of postnatal life, to prevent the further progression of the deformity and possible complications associated with increased intracranial pressure. The principles of surgical intervention are not only to excise the fused suture but also to attempt to normalize the calvarial shape. Long-term follow-up is critical to determine the effect of the surgical outcome.



**Abstract - Anat - 02**

**Endometriosis**

*Shanmugapriya and Sarah,*

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

Endometriosis is a gynecological condition in which cells from the lining of the uterus (endometrium) appear and flourish outside the uterine cavity, most commonly on the membrane which lines the abdominal cavity, the peritoneum. The uterine cavity is lined with endometrial cells, which are under the influence of female hormones. Endometrial cells in areas outside the uterus are also influenced by hormonal changes and respond in a way that is similar to the cells found inside the uterus. Symptoms of endometriosis are pain and infertility. Endometriosis is a condition where endometrial tissue is found outside the uterus. It is 'trapped' in the pelvic area and lower tummy (abdomen) and, rarely, in other areas in the body. Endometriosis is an often painful disorder in which tissue that normally lines the inside of your uterus — the endometrium. Endometriosis most commonly involves your ovaries, bowel or the tissue lining your pelvis. Rarely, endometrial tissue may spread beyond your pelvic region. The exact number of women who develop endometriosis is not known. This is because many women have endometriosis without symptoms, or with mild symptoms, and are never diagnosed. If symptoms develop they typically begin between the ages of 25-40. Sometimes symptoms begin in the teenage years. Endometriosis can affect any woman. However, sometimes it runs in families. Therefore, endometriosis is more common in close blood relatives of affected women. Endometriosis is rare in women past the menopause, as to develop endometriosis you need oestrogen, the female hormone. Women with endometriosis typically describe menstrual pain that's far worse than usual. They also tend to report that the pain has increased over time. Common signs and symptoms of endometriosis may include painful periods (dysmenorrhea), pelvic pain and cramping may begin before and extend several days into period and may include lower back and abdominal pain, pain with intercourse. Pain during or after sex is common with endometriosis, pain with bowel movements or urination, excessive bleeding, occasional heavy periods (menorrhagia) or bleeding between periods (menometrorrhagia). Endometriosis is first diagnosed in some women who are seeking treatment for infertility. You may also experience fatigue, diarrhoea, constipation, bloating or nausea, especially during menstrual periods. The severity of your pain isn't necessarily a reliable indicator of the extent of the condition. Some women with mild endometriosis have extensive pain, while others with advanced endometriosis may have little pain or even no pain at all. Endometriosis is sometimes mistaken for other conditions that can cause pelvic pain, such as pelvic inflammatory disease (PID) or ovarian cysts. It may be confused with irritable bowel syndrome (IBS), a condition that causes bouts of diarrhea, constipation and abdominal cramping. IBS can accompany endometriosis, which can complicate the diagnosis.



**Abstract - Anat - 03**

**Hyperacusis**

*Vinish and Denesh,*

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

Hyperacusis (also spelled hyperacousis) is a health condition characterized by an over-sensitivity to certain frequency and volume ranges of sound (a collapsed tolerance to usual environmental sound). A person with severe hyperacusis has difficulty tolerating everyday sounds, some of which may seem unpleasantly or painfully loud to that person but not to others. Hyperacusis is a disorder in loudness perception. Patients suffering from hyperacusis may appear overly sensitive to a range of sounds, finding many noises unbearable and painfully loud. Hyperacusis is not the same as "recruitment," a disorder that can be a normal consequence of hearing loss and is associated with abnormal perception of sound as the volume increases. The condition can affect children and adults, but is considered rare, occurring in an estimated one in 50,000 people. It can be caused by a number of factors. The most common is related to damage to the cochlea from exposure to loud noises such as those experienced at certain work environments, rock concerts, gunfire, air bag deployment in cars and fireworks. The condition often affects people who have sustained a head injury, as well as those with tinnitus, a common condition in which people hear a ringing noise in their ears. Other causes may include acoustic trauma, adverse reactions to medicine or surgeries, chronic ear infections, and autoimmune disorders. The hallmark symptom of hyperacusis is having a reduced tolerance and increased sensitivity to everyday sounds in your normal environment. People who suffer from the disease often complain of living in a world in which the volume seems to be turned up too high. Because of this, their quality of life is affected, and they may begin to wear earplugs or earmuffs in public situations where they cannot control the noise. For people with hyperacusis, the everyday, normal sounds that most people hardly notice suddenly become irritating and painful. Often the most disturbing sounds are sudden, high-pitched noises, such as alarms, bus brakes, the clanging of silverware and dishes, children's screams and clapping. It is important to note, however, that most people with true hyperacusis don't appear to have any hearing loss as measured and recorded on an audiogram. They may have difficulty hearing speech in noisy environments or in poor listening conditions, even when hearing tests show no hearing loss. This is sometimes called obscure auditory dysfunction or auditory processing difficulty. Although a corrective surgical or medical approach for treating hyperacusis is not available at this time, there are a number of existing therapies that can help reduce a person's fears and anxieties about the disease, as well as their actual sensitivity to sounds. These may include retraining and acoustic therapies.



**Abstract - Anat - 04**

**Tumors Disorders of Neural Crest Cells**

*Sree Vidhya and Suganya,*

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

The neural crest is a transient population of migratory cells in the embryo that gives rise to a wide variety of different cell types, including those of the peripheral nervous system. Dysfunction of neural crest cells (NCCs) is associated with multiple diseases, such as neuroblastoma and Hirschsprung disease. Recent studies have identified NCC behaviors during their migration and differentiation, with implications for their contributions to development and disease. Here, we describe how interactions between cells of the neural crest and lineages such as the vascular system, as well as those involving environmental signals and microbial pathogens, are critically important in determining the roles played by these cells. Pheochromocytoma, neuroblastoma, neurofibromatosis, medullary carcinoma of the thyroid, carcinoid tumors, Hirschsprung's disease, and nonchromaffin paragangliomas are discussed and analysed in terms of their proposed neural crest origins. Combinations and permutations of these entities form discrete syndromes, all of which tend to be embryogenetically related as the neurocristopathies. Other peculiar interrelationships are shown, emphasizing their common neuroectodermal origin. The wide distribution and multipotentialities of the migratory derivatives of the neural crest and their susceptibilities to teratogenic, oncogenic, and mutagenic influences are discussed. Human neurofibromatosis type 1 is a dominant disease caused by the inheritance of a mutant allele of the *NF1* gene. In order to study *NF1* function, we have constructed a mouse strain carrying a germline mutation in the murine homologue. Heterozygous animals do not exhibit the classical symptoms of the human disease, but are highly predisposed to the formation of various tumour types, notably pheochromocytoma, a tumour of the neural crest-derived adrenal medulla, and myeloid leukaemia, both of which occur with increased frequency in human *NF1* patients. The wild-type *Nf1* allele is lost in approximately half of the tumours from heterozygous animals. In addition, homozygosity for the *Nf1* mutation leads to abnormal cardiac development and mid-gestational embryonic lethality.



**Abstract - Anat - 05.**

**Non Identical Twins**

*Rashika and Ragul*

*,Saveetha Dental College & Hospitals,  
Saveetha University, Chennai600077*

The twin birth rate in the United States rose 76% from 1980 through 2009, from 18.9 to 33.3 per 1,000 births. possibly because of high consumption of a specific type of yam containing a natural phytoestrogen which may stimulate the ovaries to release an egg from each side.the world's highest rates of twinning are found across central africa, where there are 18–30 twin sets (or 36–60 twins) per 1,000 live births. In Latin America, south asia, and southeast asia, the lowest rates are found; only 6–9 twin sets per 1,000 live births. Half-identical or semi-identical twins (also referred to as "half twins") are the result of a very rare form of twinning in which the twins inherit exactly the same genes from their mother but different genes from their father. Although examples of half-identical twins have been found, the exact mechanism of their conception is not well-understood, but could theoretically occur in polar body twinning where sperm cells fertilize both the ovum and the second polar body.This situation is not the same as the common form of fraternal twinning, in which two genetically different ova are fertilized by two genetically different sperm. In this case, the ova are genetically identical.North america and europe have intermediate rates of 9–16 twin sets per 1,000 live births. Multiple pregnancies are much less likely to carry to full term than single births, with twin pregnancies lasting only 37 weeks (3 weeks less than full term) on average. Women who have a family history of fraternal twins have a higher chance of producing fraternal twins themselves, as there is a genetically linked tendency to hyper-ovulate. There is no known genetic link for identical twinning. Other factors that increase the odds of having fraternal twins include maternal age, fertility drugs and other fertility treatments, nutrition, and prior births. Non identical twins usually occur when two fertilized eggs are implanted in the uterine wall at the same time ,that is when the mother releases two eggs and both become fertilized by two different sperms. The two eggs form two zygotes, and these twins are therefore also known as dizygotic.dizygotic twins like any siblings have a very small chance of having the exact same chromosome profile, but most likely have a number of different chromosome that distinguish them,.



**BIOCHEMISTRY (ORAL PRESENTATIONS)**

**Abstract - BIO-01**

**Antioxidant Exhalers Of Life**

*Srinivasan.J,*

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Antioxidants come up frequently in discussions about good health and preventing diseases. These powerful substances, which mostly come from the fresh fruits and vegetables we eat, prohibit (and in some cases even prevent), the oxidation of other molecules in the body. The benefits of antioxidants are very important to good health, because if free radicals are left unchallenged, they can cause a wide range of illnesses and chronic diseases. The human body naturally produces free radicals and the antioxidants to counteract their damaging effects. However, in most cases, free radicals far outnumber the naturally occurring antioxidants. In order to maintain the balance, a continual supply of external sources of antioxidants is necessary in order to obtain the maximum benefits of antioxidants. Antioxidants benefit the body by neutralizing and removing the free radicals from the bloodstream. There are a wide range of antioxidants found in nature, and because they are so varied, different antioxidants provide benefits to different parts of the body. For example, beta-carotene (and other carotenoids) is very beneficial to eye health; lycopene is beneficial for helping maintain prostate health; flavonoids are especially beneficial for heart health; and proanthocyanidins are beneficial for urinary tract health. When skin is exposed to high levels of ultraviolet light, photo-oxidative damage is induced by the formation of different types of reactive species of oxygen, including singlet oxygen, superoxide radicals, and peroxide radicals. These forms of reactive oxygen damage cellular lipids, proteins, and DNA, and they are considered to be the primary contributors to erythema (sunburn), premature aging of the skin, photodermatoses, and skin cancers. Astaxanthin, followed by beta-carotene combined with vitamin E has been shown to be one of the most powerful antioxidant combinations for helping protect the skin from reactive species of oxygen. Singlet oxygen can compromise the immune system, because it has the ability to catalyze production of free radicals. Astaxanthin and Spirulina have been shown to enhance both the non-specific and specific immune system, and to protect cell membranes and cellular DNA from mutation.



**Abstract -BIO-02**

**Impact of xylitol in Dental Caries**

**Karthikeyan.M**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Dental caries is a infectious microbiologic disease of the tooth that results in localized dissolution and destruction of calcified tissues. Its seen in all age groups, few preventive agents have been evaluated to prevent the caries. Xylitol, a polysugar, obtained from birch tree has been shown to reduce dental caries when mixed with food, chewing gums and milk. Dental caries are prevalent in acidic pH where *Streptococcus mutans* (MS) ferment and does resulting in demineralization of tooth this acidic pH is created by consumption of carbohydrate foods which results in decreased salivary secretion which in turn result demineralization of tooth, where as *Streptococcus mutans* cannot ferment xylitol thus it reduces MS by altering their metabolic pathway and enhance remineralization and helps arrest dentinal caries. Reduction in caries rate are greater, when xylitol is used as the sugar substitutes. This review discuss the taste acceptability of xylitol in milk as a step towards measuring the effectiveness for the reduction of dental caries. This is the disease that dentist deals with more than 90% of the time. According to acidogenic theory, dental decay is caused by acids produced by microbial enzymatic action on ingested carbohydrates. These acids will decalcify the inorganic portion of the tooth; then the organic portion is disintegrated, creating cavities. The proteolysis theory, on the other hand, claims that the organic portion of the tooth is attacked first with certain lytic enzymes. This leaves the inorganic portion without a matrix support, causing it to be washed away, creating cavities. In a third theory, microbionic secretions, or metabolic products of microorganisms, have the ability to chelate calcium from tooth substances, leaving the organic matrix to be disintegrated. Each of these theories fails to explain all ramifications of the disease, but all three agree on the following. Host (tooth) Parasite (plaque microorganisms) Medium, (carbohydrates in the diet) Time.



**Abstract - BIO-03**

**Forward and Reverse Genetics**

**Meenakshi .M**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Forward genetics refers to the process of identifying a phenotype and then characterizing the genetic change that is responsible for that phenotype. A forward genetics approach would involve mutagenizing a population and conducting a genetic screen for a particular phenotype. Once the mutant phenotype is characterized, the mutation is mapped to determine which gene's or protein's activity is being affected. Forward genetics is starting with a phenotype and gaining information about the underlying genotype responsible. Reverse genetics involves starting with a known gene and then disrupting the function of that gene to produce a phenotype and gain insight into what that gene does. For reverse genetics you need genome sequence. For well-characterized species such as *Arabidopsis*, sequence information and reverse genetics tools are abundant. T-DNA insertional mutants have been produced by a number of groups for reverse genetics in *Arabidopsis* (e.g. Salk Institute, NASC, FST project, etc.) (Page, *et al* 2002). If a researcher wishes to obtain information about the function of a candidate gene, he/she may request a T-DNA insertion line and begin a detailed phenotypic analysis. For non-model species, in which only partial genome sequence is available, RNAi from an inverted repeat-containing transgene or virus-induced gene silencing (VIGS) may be used to associate a phenotype with the loss of gene function. RNAi, however, requires that the species be transformable and the knockout phenotype viable. VIGS requires the construction or adaptation of a viral vector that does not produce severe symptoms. VIGS has not been transmitted through seed, is not useful for genes that function in some processes such as embryogenesis, but does produce silencing phenotypes rapidly. Genome sequencing, in combination with various computational and empirical approaches to sequence annotation, has made possible the identification of more than 30,000 genes in *Arabidopsis thaliana*. Increasingly sophisticated genetic tools are being developed with the long-term goal of understanding how the coordinated activity of these genes gives rise to a complex organism. The combination of classical forward genetics with recently developed genome-wide, gene-indexed mutant collections is beginning to revolutionize the way in which gene functions are studied in plants. High-throughput screens using these mutant populations should provide a means to analyse plant gene functions the phenome on a genomic scale.



**Abstract - BIO-04**

**Nanorobots In Medical Treatment**

**Hemamalini Balaji,**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

This paper provides a technical survey on recent developments of nanorobots in medical applications. The recent advancement of nanotechnology leads to nanorobots, which are effectively used as nanomedicine to perform treatments even at the cellular level. Much research work has been carried out based on the nanorobots such as diagnosing, treating, preventing disease, some traumatic injury, of relieving pain and improving human health using some tools and molecular knowledge of human body. This paper covers the architecture of nanorobots using sensors for medical target identification and drug delivery. The focus of this paper is on the nanorobots design, path planning .detection and its control movements inside human body. Imagine going to the doctor to get treatment for a persistent fever. Instead of giving you a pill or a shot, the doctor refers you to a special medical team which implants a tiny robot into your bloodstream. The robot detects the cause of your fever, travels to the appropriate system and provides a dose of medication directly to the infected area. Surprisingly, we're not that far off from seeing devices like this actually used in medical procedures. They're called nanorobots and engineering teams around the world are working to design robots that will eventually be used to treat everything from hemophilia to cancer. The somewhat speculative claims about the possibility of using nanorobots in medicine, advocates say, would totally change the world of medicine once it is realized. Nanomedicine would make use of these nanorobots, introduced into the body, to repair or detect damages and infections. A typical blood borne medical nanorobot would be between 0.5-3 micrometres in size, because that is the maximum size possible due to capillary passage requirement. Carbon would be the primary element used to build these nanorobots due to the inherent strength and other characteristics of some forms of carbon and nanorobots would be fabricated in desktop nanofactories specialized for this purpose. To avoid being attacked by the host's immune system, the best choice for the exterior coating is a passive diamond coating. The smoother and more flawless the coating, the less the reaction from the body's immune system. Such devices have been designed in recent years but no working model has been built so far. Nanodevices could be observed at work inside the body using MRI, especially if their components were manufactured using mostly  $^{13}\text{C}$  atoms rather than the natural  $^{12}\text{C}$  isotope of carbon, since  $^{13}\text{C}$  has a nonzero nuclear magnetic moment. Medical nanodevices would first be injected into a human body, and would then go to work in a specific organ or tissue mass.



**BIOCHEMISTRY (POSTERS PRESENTATIONS)**

**Abstract - BIO-01**

**Breast Cancer**

**Kasthuri and Durga Devi**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Cancer that forms in tissues of the breast. The most common type of breast cancer is ductal carcinoma, which begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Another type of breast cancer is lobular carcinoma, which begins in the lobules (milk glands) of the breast. Invasive breast cancer is breast cancer that has spread from where it began in the breast ducts or lobules to surrounding normal tissue. Breast cancer occurs in both men and women, although male breast cancer is rare. Breast cancer Invasive breast cancer is a heterogeneous disease in its presentation, pathological classification and clinical course. However, there are more than a dozen variants which are less common but still very well defined by the World Health Organization (WHO) classification. The rarity of many of these neoplasms does not allow large or randomized studies to define the optimal treatment. Many of the descriptions of these cancers are from case reports and small series. Our review brings updated information on 16 epithelial subtypes as classified by the WHO system with a very concise histopathology description and parameters helpful in the clinic. The aim of our review is to provide a tool for breast cancer caregivers which will enable a better understanding of the disease and its optimal approach to therapy. This may also stand as a clinical framework for a future understanding of these rarer breast cancers when gene analysis work is reported. Breast cancer is one of the most common cancers. Around one in nine women develop breast cancer at some stage in their life. About 48,000 cases occur in the UK each year. Most develop in women over the age of 50 but younger women are sometimes affected. Breast cancer can also develop in men, although this is rare. Breast cancer develops from a cancerous cell which develops in the lining of a duct or lobule in one of the breasts. There are some subtypes of breast cancer which are important to know, as the treatment and outlook (prognosis) vary depending on the exact type of the cancer. The following gives a rough idea of the main subtypes. Your specialist will be able to give you more details as to the exact subtype of breast cancer that you have.

*Proceedings of Eight International B.D.S. Students seminar on Basic Medical Sciences  
27<sup>th</sup> april 2013*



**Abstract - BIO-02**

**Oral Cancer**

**Kavienna and Lavanya**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Oral cancers are one of the most common cancers worldwide today. They are usually neglected by the common population when compared to systemic cancers such as the lung cancer, colon cancer etc. However, they also may be extremely fatal if left untreated even at a very initial stage of the lesion. Early detection and treatment gives the best chance for its cure. The five-year survival rate of oral cancer still remains low and delayed diagnosis is suggested to be one of the major reasons. The detection and diagnosis are currently based on clinical examination, histopathological evaluation of the biopsy material and molecular methods. Several diagnostic aids have been developed over the years for early detection of oral cancer. The purpose of this article is to review the advanced available diagnostic adjuncts for the detection of oral cancer. Tobacco and alcohol use. Most cases of oral cancer are linked to cigarette smoking, heavy alcohol use, or the use of both tobacco and alcohol together. Using tobacco plus alcohol poses a much greater risk than using either substance alone.

HPV. Infection with the sexually transmitted human papillomavirus (specifically the HPV 16 type) has been linked to a subset of oral cancers. Age. Risk increases with age. Oral cancer most often occurs in people over the age of 40. Sun exposure. Cancer of the lip can be caused by sun exposure. Diet. A diet low in fruits and vegetables. A sore, irritation, lump or thick patch in the mouth, lip, or throat, A white or red patch in the mouth, A feeling that something is caught in the throat, Difficulty chewing or swallowing, Difficulty moving the jaw or tongue, Numbness in the tongue or other areas of the mouth, Swelling of the jaw that causes dentures to fit poorly or become uncomfortable, Pain in one ear without hearing loss. A person who has any of these symptoms for more than 2 weeks should see a dentist or doctor for an oral cancer exam. Most often, symptoms like those listed above do not mean cancer. An infection or another problem can cause the same symptoms.



**Abstract - BIO-03**

**Bioluminescence**

**Vaishnavi and Nikitha**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Bioluminescence spans all oceanic dimensions and has evolved many times—from bacteria to fish—to powerfully influence behavioral and ecosystem dynamics. New methods and technology have brought great advances in understanding of the molecular basis of bioluminescence, its physiological control, and its significance in marine communities. Novel tools derived from understanding the chemistry of natural light-producing molecules have led to countless valuable applications, culminating recently in a related Nobel Prize. Marine organisms utilize bioluminescence for vital functions ranging from defense to reproduction. To understand these interactions and the distributions of luminous organisms, new instruments and platforms allow observations on individual to oceanographic scales. This review explores recent advances, including the chemical and molecular, phylogenetic and functional, community and oceanographic aspects of bioluminescence. The light emitted by a bioluminescent organism is produced by energy released from chemical reactions occurring inside (or ejected by) the organism. If you've ever seen a firefly, you have encountered a bioluminescent organism. In the ocean, bioluminescence is not as rare as you might think. In fact, most types of animals, from bacteria to sharks, include some bioluminescent members. Also, bioluminescent are found throughout marine habitats, from the ocean surface to the deep sea floor. While the functions of bioluminescence are not known for all animals, typically bioluminescence is used to warn or evade predators), to lure or detect prey, for communication between members of the same



**Abstract - BIO-04**

**One Gene One Enzyme Theory**

**Poorna Prabha and Parvathi**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

The one gene-one enzyme hypothesis is the idea that genes act through the production of enzymes, with each gene responsible for producing a single enzyme that in turn affects a single step in a metabolic pathway. The concept was proposed by George Beadle and Edward Tatum in an influential 1941 paper on genetic mutations in the mold *Neurospora crassa*, and subsequently was dubbed the "one gene-one enzyme hypothesis" by their collaborator Norman Horowitz. In 2004 Norman Horowitz reminisced that these experiments founded the science of what Beadle and Tatum called 'biochemical genetics. In actuality they proved to be the opening gun in what became molecular genetics and all the developments that have followed from that. The development of the one gene-one enzyme hypothesis is often considered the first significant result in what came to be called molecular biology. Although it has been extremely influential, the hypothesis was recognized soon after its proposal to be an oversimplification. Even the subsequent reformulation of the "one gene-one polypeptide" hypothesis is now considered too simple to describe the relationship between genes and proteins. one gene-one enzyme hypothesis, idea advanced in the early 1940s that each gene controls the synthesis or activity of a single enzyme. The concept, which united the fields of genetics and biochemistry, was proposed by American geneticist George Wells Beadle and American biochemist Edward L. Tatum, who conducted their studies in the mold *Neurospora crassa*. Their experiments involved first exposing the mold to mutation-inducing X-rays and then culturing it in a minimal growth medium that contained only the basic nutrients that the wild-type, or nonmutated, strain of mold needed to survive. They found that the mutant strains of mold required the addition of specific amino acids to the minimal medium in order to grow. Using this information, the researchers were able to associate mutations in specific genes to the disruption of individual enzymes in the metabolic pathways that normally produced the missing amino acids. This discovery won Beadle and Tatum the 1958 Nobel Prize for Physiology or Medicine (shared with American geneticist Joshua Lederberg). Although the hypothesis was amply verified in principle, it has undergone considerable sophistication since the 1940s.



**Abstract - BIO-05**

**Kidney Stone in adult**

**Rathithya and Mithun Raj**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

A kidney stone is a solid piece of material that forms in a kidney when substances that are normally found in the urine become highly concentrated. A stone may stay in the kidney or travel down the urinary tract. Kidney stones vary in size. A small stone may pass on its own, causing little or no pain. A larger stone may get stuck along the urinary tract and can block the flow of urine, causing severe pain or bleeding. Kidney stones are one of the most common disorders of the urinary tract. Each year in the United States, people make more than a million visits to health care providers and more than 300,000 people go to emergency rooms for kidney stone problems. Urolithiasis is the medical term used to describe stones occurring in the urinary tract. Other frequently used terms are urinary tract stone disease and nephrolithiasis. Terms that describe the location of the stone in the urinary tract are Urinary tract stones. Not all kidney stones are made up of the same crystals. The different types of kidney stones include: Calcium- Calcium stones are the most common. They can be made of calcium oxalate (most common), phosphate, or maleate. Vitamin C and spinach contain oxalate. Calcium-based kidney stones are most commonly seen in young men between the ages of 20 and 30. Uric Acid- This type of kidney stone is more common in men than in women. They can occur in people with gout or those going through chemotherapy. Struvite- This type of stone is found mostly in women with urinary tract infection. These stones can be quite large and cause urinary obstruction. Cystine- Cystine stones are rare. They occur in both men and women who have the genetic disorder cystinuria. Other- Medications like triamterene and acyclovir also can cause stone



**Abstract - BIO-06**

**Gene Therapy**

**Benzazir hussain and Bhawani Gupta**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

Gene therapy is an experimental technique that uses genes to treat or prevent disease. In the future, this technique may allow doctors to treat a disorder by inserting a gene into a patient's cells instead of using drugs or surgery. Researchers are testing several approaches to gene therapy, including: Replacing a mutated gene that causes disease with a healthy copy of the gene. Inactivating, or "knocking out," a mutated gene that is functioning improperly. Introducing a new gene into the body to help fight a disease. Although gene therapy is a promising treatment option for a number of diseases (including inherited disorders, some types of cancer, and certain viral infections), the technique remains risky and is still under study to make sure that it will be safe and effective. Gene therapy is currently only being tested for the treatment of diseases that have no other cures. Gene therapy is an experimental technique that uses genes to treat or prevent disease. In the future, this technique may allow doctors to treat a disorder by inserting a gene into a patient's cells instead of using drugs or surgery. Researchers are testing several approaches to gene therapy, including: Replacing a mutated gene that causes disease with a healthy copy of the gene. Inactivating, or "knocking out," a mutated gene that is functioning improperly. Introducing a new gene into the body to help fight a disease. Although gene therapy is a promising treatment option for a number of diseases (including inherited disorders, some types of cancer, and certain viral infections), the technique remains risky and is still under study to make sure that it will be safe and effective. Gene therapy is currently only being tested for the treatment of diseases that have no other cures. The majority of clinical gene therapy trials are being conducted in the United States and Europe, with only a modest number initiated in other countries, including Australia. The majority of these trials focus on treating acquired conditions such as cancer. A form of immune deficiency called adenosine deaminase (ADA) deficiency was the first condition to be treated with a gene therapy approach in humans in the early 1990s. It is also the first condition for which therapeutic gene transfer into stem cells



**Abstract - BIO-07**

**Age in Biochemistry**

**Visha M.G and Vaishali**

*Saveetha Dental College and Hospitals,  
Saveetha University Chennai-600077*

The study of aging - gerontology - is a relatively new science that has made incredible progress over the last 30 years. In the past, scientists looked for a single theory that explained aging. There are two main groups of aging theories. The first group states that aging is natural and programmed into the body, while the second group of aging theories say that aging is a result of damage which is accumulated over time. In the end, aging is a complex interaction of genetics, chemistry, physiology and behavior. By understanding and describing how we age, researchers have developed several different theories of aging. The two categories are: programmed theories and error theories. No matter what genes you have inherited, your body is continually undergoing complex biochemical reactions. Some of these reactions cause damage and, ultimately, aging in the body. Studying these complex reactions is helping researchers understand how the body changes as it ages. Important concepts in the biochemistry of aging include: Free Radicals: Unstable oxygen molecules which can damage cells. Protein Cross-Linking: Excess sugars in the blood stream can cause protein molecules to literally stick together. DNA Repair: For an unknown reasons, the systems in the body to repair DNA seem to become less effective in older people. Heat Shock Proteins: These proteins help cells survive stress and are present in fewer numbers in older people. Hormones: The body's hormones change as we age, causing many shifts in organ systems and other functions.



**MICROBIOLOGY (ORAL PRESENTATIONS)**

**Abstract - Micro – 01**

**VENTILATOR-ASSOCIATED PNEUMONIA (VAP)**

**Nivedha**

*Saveetha Dental College and Hospitals, Saveetha University, Chennai -77*

Ventilator-associated pneumonia (VAP) is pneumonia that develops after mechanical ventilation is given by means of an endotracheal tube or tracheostomy. Ventilator-associated pneumonia (VAP) results from the invasion of the lower respiratory tract and lung parenchyma by microorganisms. Intubation compromises the integrity of the oropharynx and trachea and allows oral and gastric secretions to enter the lower airways. Ventilator-associated pneumonia (VAP) continues to complicate the course of 8 to 28% of patients receiving mechanical ventilation (MV). In contrast to infections of more frequently involved organs (e.g., urinary tract and skin), for which mortality is low, ranging from 1 to 4%, the mortality rate for VAP ranges from 24 to 50% and can reach 76% in some specific settings or when lung infection is caused by high-risk pathogens. The predominant organisms responsible for infection are *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and Enterobacteriaceae, but etiologic agents widely differ according to the population of patients in an intensive care unit, duration of hospital stay, and prior antimicrobial therapy. Because appropriate antimicrobial treatment of patients with VAP significantly improves outcome, more rapid identification of infected patients and accurate selection of antimicrobial agents represent important clinical goals. Our personal bias is that using bronchoscopic techniques to obtain protected brush and bronchoalveolar lavage specimens from the affected area in the lung permits physicians to devise a therapeutic strategy that is superior to one based only on clinical evaluation. When fiberoptic bronchoscopy is not available to physicians treating patients clinically suspected of having VAP, we recommend using either a simplified nonbronchoscopic diagnostic procedure or following a strategy in which decisions regarding antibiotic therapy are based on a clinical score constructed from seven variables. Selection of the initial antimicrobial therapy should be based on predominant flora responsible for VAP at each institution, clinical setting, information provided by direct examination of pulmonary secretions, and intrinsic antibacterial activities of antimicrobial agents and their pharmacokinetic characteristics. Further trials will be needed to clarify the optimal duration of treatment and the circumstances in which monotherapy can be safely used. This paper explains various micro organisms encountered and its management.



**Abstract - Micro – 02**

**SALIVA AS THE MIRROR OF BODY HEALTH**

**Rakhi menon**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai -77*

**ABSTRACT :**

Saliva, the most available and non-invasive biofluid of the human body, permanently "bathes" the oral cavity. Saliva includes a large number of inorganic and organic compounds, which act as a "mirror of the body's health." In addition to its other functions, saliva could constitute the first line of defense against oxidative stress. Due to its composition and functions, saliva could have a significant role in controlling and/or modulating oxidative damages in the oral cavity. As a diagnostic fluid, saliva offers distinctive advantages over serum. Whole saliva, however, is most frequently used for diagnosis of systemic diseases. As we enter the era of genomic medicine, sialochemistry will play an increasingly important role in the early detection, the monitoring and progression of the systemic and oral diseases. The oral cavity, a very complex and unique milieu due to its dual function, is the only place in the body where the mineralized tissue is exposed to the external environment in which there are complex interactions between various surfaces: host soft and hard tissues, food, air, and microorganisms. Furthermore, saliva may provide a cost-effective approach for the screening of large populations. Gland-specific saliva can be used for diagnosis of pathology specific to one of the major salivary glands. Whole saliva, however, is most frequently used for diagnosis of systemic diseases. We reviewed the current data within literature and of our research concerning clinical potential of the saliva.



**Abstract - Micro - 03**

**BACTERIAL INDICATOR IN MALIGNANCY OF ORAL CANCER**

**Karthik**

*Saveetha dental college and hospitals,  
Saveetha university, Chennai -77*

**ABSTRACT :**

Oral cancer most commonly occurs in middle-aged and older individuals, although a disturbing number of these malignancies is also being documented in younger adults in recent years. From an epidemiological and clinic pathological perspective, “oral cancer” can be divided into three categories: carcinomas of the oral cavity proper, carcinomas of the lip vermilion, and carcinomas arising in the oropharynx. Intraoral and oropharyngeal tumors are more common among men than women, with a male : female ratio of over 2:1. However, the disparity in the Male : female ratio has become less pronounced over the past half century, probably because women have been more equally exposing themselves to known oral carcinogens such as tobacco and alcohol. The annual incidence of oral an Patients suffering from oral cancer have increased levels of certain bacteria in their saliva. Six common species of bacteria were found at significantly higher levels in the saliva of patients with oral squamous cell carcinoma (OSCC) than in the saliva of healthy individuals. The researchers were able to use three of the six species as a diagnostic tool to predict more than 80% of oral cancer cases. These preliminary findings indicate that three species of bacteria may be incidentally or causally linked with OSCC, and if so detection of these species could be used as a simple, rapid and non-invasive saliva-test to diagnose oral cancer. Oral and oro-pharyngeal cancer will depend on two cornerstones: prevention and early diagnosis. Continuing educational campaigns are needed on the local, state, and national level in order to educate the public about the risk factors and early signs/symptoms associated with this disease. Individuals also need to be encouraged to seek regular professional oral examinations by a dentist and/or physician. Finally, health care workers must be encouraged to perform oral cancer examinations as part of their patientcare regime, and to be knowledgeable about early signs of oral carcinoma.



**Abstract - Micro - 04**

**Macrophage Interaction In Persistant Viral Interaction**

**Preksha**

*Saveetha Dental College and Hospitals,  
Saveetha University, Chennai- 77*

**Abstract :**

Macrophages are recognized as a scavenger cell that, non specifically eliminate the foreign agents that enters the body and also it is involved in specific immune response. In contrary to their role in defense, macrophages are implicated in the role of persistence of certain viral infection. Certain viruses carries the gene that prevents the apoptosis. This makes the macrophage immortal and the virus persist for long without elimination. It is evident through the demonstration of the virus and their genome in people having recurrent viral attack. Macrophages are thought to be the first cell to identify the foreign antigen and eliminate them non specifically. It is also important in initiating the specific immune response that offer a complete defense and immunity against them during repeated infections. But macrophages are found to be a safe site for many organisms that resist intracellular digestion. There are viruses that enters the macrophages non specifically and persist in them for life time. The latent viruses will periodically undergo reactivation and sometimes produces a clinical illness. The reactivation is more frequent in immunocompromised and immunosuppressed individuals. The problems are more in AIDS patients which severely deteriorate the quality of life. Certain viruses like the Herpes viruses and measles virus, inherently has the capacity to establish latency. It is evident that the viruses are not neurotropic but still associated with complications of the nervous system. Those viruses are isolated from the macrophages from the apparently healthy individuals. They may persist in the macrophages in the brain tissue and in the macrophages surrounding the ganglion. It should be understood that these viruses do not produce any damage to the neuron as they are non neurotropic. In measles the late complication due to the persistence of the virus in the glial is an autoimmune mechanism. The frequent reactivation of the virus in the glial cells induces interleukin production. This leads to aberrant expression of self MHC molecule that in turn attracts the immune attack. Similar mechanism is also evident in some slow viral infection like visna, meidi and kuru. In general these latent viruses do not produce a clinical illness unless they get an opportunity to multiply. Though the environment plays a major, the main factor that is responsible is the impaired immune response.



**Abstract - Micro - 05**

**Recent Trends In Hiv Infection**

**Suhasini**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai -77*

**Abstract :**

The nation's investment in HIV prevention has contributed to dramatic reductions in the annual number of new infections since the peak of the epidemic in the mid-1980s, and an overall stabilization of new infections since the mid-1990s. While new infections per year continue at too high a level, this stabilization is in itself a sign of progress. With continued increases in the number of people living with HIV thanks to effective HIV medications, there are more opportunities for HIV transmission than ever before. Yet, the annual number of new infections has not increased, indicating that HIV testing, prevention, and treatment programs are effectively reducing the rate of transmission overall. Declines in new infections have also been documented in several key populations over time, underscoring the impact and importance of concentrated prevention efforts. Vaccines against HIV are being developed, and they are in various stages of clinical trial but at present none have proven effective. An HIV vaccine is a vaccine which would either protect individuals who do not have HIV from contracting that virus, or otherwise may have a therapeutic effect for persons who have or later contract HIV/AIDS. Currently, there is no effective HIV vaccine but many research projects managing clinical trials seek to create one. There is evidence that a vaccine may be possible. Work with monoclonal antibodies (MAb) has shown or proven that the human body can defend itself against HIV, and certain individuals remain asymptomatic for decades after HIV infection. Potential candidates for antibodies and early stage results from clinical trials have been announced. One HIV vaccine candidate which showed some efficacy was studied in RV 144, which was a trial in Thailand beginning in 2003 and first reporting a positive result in 2009. Many trials have shown no efficacy, including the STEP study and HVTN 505 trials. The availability of a safe, highly effective and accessible preventive HIV vaccine would be a valuable complement to other preventive interventions, significantly contributing to the interruption of the chain of transmission of HIV. Well conceived HIV immunization strategies could reach populations where other interventions are not sufficiently effective.



**MICROBIOLOGY (POSTERS PRESENTATIONS)**

**Abstract - Micro - 01**

**Bacterimia In Endocarditis**

**Nirosha, Priyadarshini**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai -77*

**ABSTRACT :**

Endocarditis is a disease characterized by inflammation or infection of the inner surface of the heart (the endocardium). This article will focus on endocarditis that is the result of infection (infective endocarditis). Endocarditis commonly affects heart valves, but may also involve non valvular areas or mechanical devices that are implanted in the heart, such as artificial heart valves, pacemakers, or implantable defibrillators. Infective endocarditis is an uncommon, but not rare, disease affecting about 10 000 to 20 000 persons in the United States each year. Although uncommon, endocarditis is important because, despite antimicrobial therapy, it can result in serious complications such as stroke, the need for open heart surgery, or even death. Bacterial endocarditis is a relatively uncommon, life-threatening infection of the endothelial surface of the heart, including the heart valves. Despite advances in antimicrobial therapy and the diagnosis and treatment of complications, bacterial endocarditis continues to be responsible for substantial morbidity and mortality. When endocarditis occurs, small masses called vegetations form at the site of infection . When vegetations are viewed under a microscope, generally one sees the microorganism that causes the infection embedded in a meshwork of fibrin and other cellular material similar to that used by the body to form blood clots. White blood cells that the body uses to fight infection are uncommon, a finding which explains the need to give antibiotics over many weeks to kill the infecting organism and cure endocarditis. The absence of white blood cells in vegetations is not fully explained but likely relates in part to the dense nature of the vegetation tissue, which in turn restricts the migration of these cells. Also, the bacteria causing endocarditis are buried in a nongrowing state deep in the vegetation. In this state they do not generate the intense chemical signals that usually promote the migration of white cells to a site of infection. This poster highlights about endocarditis following tooth extraction and its management.



**Abstract - Micro - 02**

**Attenuation By Gene Manipulation**

**Naveen, Vijaya lakshmi**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai -77*

The development of vaccination against harmful pathogenic microorganisms represents an important advancement in the history of modern medicine. In the past, traditional vaccination has relied on two specific types of microbiological preparations to produce material for immunization and generation of a protective immune response. These two categories involve either living infectious material that has been manufactured in a weaker state and therefore inhibits the vaccine from causing disease, or inert, inactivated, or subunit preparations. Since its early applications in the 1950's, DNA-based immunization has become a novel approach to vaccine development. Direct injection of naked plasmid DNA induces strong immune responses to the antigen encoded by the gene vaccine. Once the plasmid DNA construct is injected the host cells take up the foreign DNA, expressing the viral gene and producing the corresponding viral protein inside the cell. This form of antigen presentation and processing induced both MHC and class I and class II restricted cellular and humoral immune responses. Attenuated vaccine viruses have the potential also to be transmitted vertically and these viruses then could be inherited through generations. Some of the genes of these viruses may become integrated with the genomes of the recipients. The damage that could result in the future from such uncontrolled genetic manipulation could be incredible. This is to say nothing whatever of the other potential dangers the vaccine recipients must bear as the result of other aspects of vaccine viral infections such as mutations, chromosomal aberrations, birth defects, cancer, and reversion to virulence.”



**PATHOLOGY (ORAL PRESENTATIONS)**

**Abstract - Path -01**

**Pathogenesis Of Oral Cancer**

**Fathima Irfana**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

Oral cancer (OC) is one of the most common cancers and it constitutes a major health problem particularly in developing countries. It is one of the leading causes of death. Tobacco and alcohol consumption appears to be the major determinants of oral cancer. Numerous risk factors or possible causative agents for OC have been described. Chemical factors like tobacco and alcohol, biological factors like human papillomavirus (HPV), syphilis, oro-dental factors, dietary deficiencies, chronic candidiasis and viruses have been shown to be significantly associated with OC. Oral carcinogenesis like any other cancer is a progressive disease and normal epithelium passes through stages starting from dysplasia to finally transforming into invasive phenotypes. There is active search to identify genetic alterations in oncogenes or tumour suppressor genes, role of genomic instability and epigenetic modifications and to generate a gene expression profile in oral oncogenesis. Understanding these genetic changes and gene expression patterns are keys to the understanding of molecular pathogenesis of OC. Though, there are some significant leads achieved, the complete understanding of molecular pathology of OC and its association with causative agent will require another decade of intensive research. More than 50% of all primary HNSCC harbour p53 mutation. Inactivation of p53 represents the most common genetic change in all human cancers . The most commonly deleted region in HNC is located at chromosome 9p21–22. Loss of chromosome 9p21 occurs in the majority of invasive tumors in head and neck cancer . Homozygous deletions in this region are frequent and represent one of the most common genetic changes identified. p16 (CDKN2) present in this deleted region, is a potent inhibitor of cyclin D1 . Loss of p16 protein has been observed in most advanced pre-malignant lesions also. Loss of chromosome 17p is also frequent in most human cancer including OC. It is seen in approximately 60% of invasive lesions. Although p53 inactivation correlates closely with loss of 17p in invasive lesions, p53 mutations are quite rare in early lesions that contain 17p loss. Loss of chromosome arm 10 and 13q are also noted in primary tumors .Many other regions of chromosomal loss have been seen in OC. Further, fine mapping of these critical genes within these areas may provide important information in the understanding of genomic instability leading to the development of this neoplasm.



**Abstract - Path -02**

**Smooth Muscle Tumours**

**Janani**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

Leiomyosarcoma is a malignant cancer of smooth muscle. When such a neoplasm is benign, it is a leiomyoma. Leiomyosarcoma is a relatively rare form of cancer, and accounts for between 5–10% of soft tissue sarcomas, which are in themselves relatively rare. Leiomyosarcomas can be very unpredictable. They can remain dormant for long periods of time and recur after years. It is a resistant cancer, meaning generally not very responsive to chemotherapy or radiation. The best outcomes occur when it can be removed surgically with wide margins early, while small and still in situ. There are no specific clinical features diagnostic of leiomyosarcoma of soft tissue that distinguish these tumors from other soft tissue sarcomas. Women are affected more than men (2:1), with the disease typically occurring in the 5th and 6th decades of life. This gender distribution may reflect the proliferation of smooth muscle that can occur in response to estrogen. Prognosis and treatment varies on the location, stage and grade of the primary tumor as well as the presence of metastatic disease. The most common site of involvement of leiomyosarcoma is the retroperitoneum, accounting for approximately 50% of occurrences. In the case of retroperitoneal tumors, presenting signs and symptoms can include an abdominal mass, pain, swelling, weight loss, nausea or vomiting. Leiomyosarcoma of somatic soft tissues, like other soft tissue sarcomas, often present as an enlarging, painless mass. Although these tumors are generally associated with small blood vessels, they usually do not present with signs or symptoms of vascular compression. However, when leiomyosarcoma arises from a major blood vessel, symptoms of vascular compromise or leg edema may be present, as well as neurologic symptoms such as numbness from compression of an adjacent nerve. Soft tissue leiomyosarcoma typically affects adults, however it can present in childhood. The histologic appearance of leiomyosarcoma of soft tissue exhibits significant variability. Typical features include a highly cellular field, with abundant pink to deep red cytoplasm on H&E staining. Cells are arranged in fascicles, and in well-differentiated tumors these fascicles are often arranged at right angles, allowing identification of both longitudinal and cross-sectional areas within one field. The nuclei are usually centrally located, and are classically described as cigar-shaped. One of the key features is the presence of myofibrils that are longitudinal and run the length of the cell. As the cells become increasingly de-differentiated, they become disorganized, and begin to lose their distinguishing characteristics.



**Abstract – Path -03**

**Flow Cytometry In Leukaemia**

**Karpaga Preethitha**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

In biotechnology, flow cytometry is a laser-based, biophysical technology employed in cell counting, cell sorting, biomarker detection and protein engineering, by suspending cells in a stream of fluid and passing them by an electronic detection apparatus. It allows simultaneous multiparametric analysis of the physical and chemical characteristics of up to thousands of particles per second. Flow cytometry is routinely used in the diagnosis of health disorders, especially blood cancers, but has many other applications in basic research, clinical practice and clinical trials. A common variation is to physically sort particles based on their properties, so as to purify populations of interest. The technology has applications in a number of fields, including molecular biology, pathology, immunology, plant biology and marine biology. It has broad application in medicine (especially in transplantation, hematology, tumor immunology and chemotherapy, prenatal diagnosis, genetics and sperm sorting for sex preselection). In marine biology, the autofluorescent properties of photosynthetic plankton can be exploited by flow cytometry in order to characterise abundance and community structure. In protein engineering, flow cytometry is used in conjunction with yeast display and bacterial display to identify cell surface-displayed protein variants with desired properties. This test is important in diagnosing CLL. It looks for certain substances on the surface of cells that help identify what types of cells they are (markers). A sample of cells is treated with special antibodies that stick only to these substances. The cells are then passed in front of a laser beam. If the cells now have antibodies attached to them, the laser will cause them to give off light, which can be measured and analyzed by a computer. This test can be used to see if the lymphocytes in a sample of blood contain CLL cells. It can also be used to look for CLL cells in bone marrow or other fluids. CLL cells can have many of the same markers as normal B-cells, but they also have a marker called CD5 that is normally found on T-cells. For someone to have CLL, there must be at least 5,000 of these cells (per mm<sup>3</sup>) in the blood. Flow cytometry can also be used to test for substances called ZAP-70 and CD38 on the cells. These substances seem to be linked to the type of B lymphocyte involved in the leukemia. Studies suggest that CLL with fewer cells that have these substances seem to have a better outlook.



**Abstract – Path -04**

**P53 Gene – Gaurdian Of Genome**

**Lakshmi**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

p53 also known as cellular tumor antigen p53 or phosphoprotein p53 or tumor suppressor p53 is a protein that in humans is encoded by the *TP53* gene. The p53 protein is crucial in multicellular organisms, where it regulates the cell cycle and, thus, functions as a tumor suppressor, preventing cancer. As such, p53 has been described as "the guardian of the genome" because of its role in conserving stability by preventing genome mutation. Hence *TP53* is classified as a tumor suppressor gene. Human p53 is 393 amino acids long and has seven domains. an acidic N-terminus transcription-activation domain (TAD), also known as activation domain 1 (AD1), which activates transcription factors: residues 1-42. The N-terminus contains two complementary transcriptional activation domains, with a major one at residues 1–42 and a minor one at residues 55–75, specifically involved in the regulation of several pro-apoptotic genes. activation domain 2 (AD2) important for apoptotic activity: residues 43-63. Proline rich domain important for the apoptotic activity of p53: residues 64-92. Central DNA-binding core domain (DBD). Contains one zinc atom and several arginine amino acids: residues 102-292. This region is responsible for binding the p53 co-repressor LMO3. nuclear localization signaling domain, residues 316-325. Homo-oligomerisation domain (OD): residues 307-355. Tetramerization is essential for the activity of p53 *in vivo*. C-terminal involved in downregulation of DNA binding of the central domain: residues 356-393. It can activate DNA repair proteins when DNA has sustained damage. Thus, it may be an important factor in aging. It can arrest growth by holding the cell cycle at the G1/S regulation point on DNA damage recognition (if it holds the cell here for long enough, the DNA repair proteins will have time to fix the damage and the cell will be allowed to continue the cell cycle). It can initiate apoptosis, the programmed cell death, if DNA damage proves to be irreparable.



**PATHOLOGY (POSTER PRESENTATIONS)**

**Abstract – Path -01**

**Juvenile Diabetes**

**Gayathri , Kasthuri**

*Saveetha Dental College And Hospitals , Saveetha University , Chennai – 600 077.*

Diabetes mellitus type 1 (also known as type 1 diabetes, or T1DM; formerly insulin dependent diabetes or juvenile diabetes) is a form of diabetes mellitus that results from the autoimmune destruction of the insulin-producing beta cells in the pancreas. The subsequent lack of insulin leads to increased blood and urine glucose. The classical symptoms are polyuria (frequent urination), polydipsia (increased thirst), polyphagia (increased hunger), and weight loss. Untreated, type 1 diabetes is ultimately fatal; however, the disease can be controlled with supplemental insulin. Insulin is most commonly administered by injection at periodic intervals several times per day, though other options, such as insulin pumps, exist. Insulin therapy must be continued indefinitely and does not usually impair normal daily activities. Type 1 diabetes can be distinguished from type 2 by autoantibody testing - glutamic acid decarboxylase autoantibodies (GADA), islet cell autoantibodies (ICA), insulinoma-associated (IA-2) autoantibodies, and zinc transporter autoantibodies (ZnT8) are present in individuals with type 1 diabetes, but not type 2. The C-peptide assay, which measures endogenous insulin production, can also be used. Type 1 diabetes can lead to a number of complications, both in the short term and in the long term. Furthermore, complications may arise from both low blood sugar and high blood sugar, both due to the non-physiological manner in which insulin is replaced. Low blood sugar may lead to seizures or episodes of unconsciousness, and requires emergency treatment. After a meal, a portion of the food a person eats is broken down into sugar (glucose). The sugar then passes into the bloodstream and into the body's cells via a hormone called insulin. Insulin is produced by the pancreas. Normally, the pancreas produces the right amount of insulin to accommodate the quantity of sugar. However, if the person has diabetes either the pancreas produces little or no insulin, or the cells do not respond normally to the insulin. Sugar builds up in the blood, overflows into the urine and passes from the body unused.



**Abstract – Path -02**

**Natural Killer Cells**

**Karthavya , Navya**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

Natural Killer Cells (or NK cells) are a type of cytotoxic lymphocyte critical to the innate immune system. The role NK cells plays is analogous to that of cytotoxic T cells in the vertebrate adaptive immune response. NK cells provide rapid responses to virally infected cells and respond to tumor formation, acting at around 3 days after infection. Typically these cells detect MHC presented on infected cell surfaces, triggering cytokine release, causing lysis or apoptosis. NK cells are unique, however, as they have the ability to recognize stressed cells in the absence of antibodies and MHC, allowing for a much faster immune reaction. They were named “natural killers” because of the initial notion that they do not require activation in order to kill cells that are missing “self” markers of major histocompatibility complex (MHC) class 1. NK cells (belonging to the group of Innate lymphoid cells) are defined as large granular lymphocytes (LGL) and constitute the third kind of cells differentiated from the common lymphoid progenitor generating B and T lymphocytes. NK cells are known to differentiate and mature in the bone marrow, lymph node, spleen, tonsils and thymus where they then enter into the circulation. In addition to the knowledge that natural killer cells are effectors of innate immunity, recent research has uncovered information on both activating and inhibitory NK cell receptors which play important function roles including self tolerance and sustaining NK cell activity. NK cell also play a role in adaptive immune response, numerous experiments have worked to demonstrate their ability to readily adjust to the immediate environment and formulate antigen-specific immunological memory, fundamental for responding to secondary infections with the same antigen. The ability for NK cells to act in both the innate and adaptive immune response is becoming increasingly important in research utilizing NK cell activity and potential cancer therapies. NK cell receptors can also be differentiated based on function. Natural cytotoxicity receptors directly induce apoptosis after binding to ligands that directly indicate infection of a cell. The MHC dependent receptors (described above) use an alternate pathway to induce apoptosis in infected cells. Natural killer cell activation is determined by the balance of inhibitory and activating receptor stimulation i.e. if the inhibitory receptor signaling is more prominent then NK cell activity will be inhibited, similarly if the activating signal is dominant then NK cell activation will result.



**Abstract – Path -03**

**Apoptosis**

**Sweetin , Syarmini**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

The cells of a multicellular organism are members of a highly organized community. The number of cells in this community is tightly regulated—not simply by controlling the rate of cell division, but also by controlling the rate of cell death. If cells are no longer needed, they commit suicide by activating an intracellular death program. This process is therefore called programmed cell death, although it is more commonly called apoptosis (from a Greek word meaning “falling off,” as leaves from a tree). The amount of apoptosis that occurs in developing and adult animal tissues can be astonishing. In the developing vertebrate nervous system, for example, up to half or more of the nerve cells normally die soon after they are formed. In a healthy adult human, billions of cells die in the bone marrow and intestine every hour. It seems remarkably wasteful for so many cells to die, especially as the vast majority are perfectly healthy at the time they kill themselves. In some cases, the answers are clear. Mouse paws, for example, are sculpted by cell death during embryonic development: they start out as spadelike structures, and the individual digits separate only as the cells between them die. In other cases, cells die when the structure they form is no longer needed. When a tadpole changes into a frog, the cells in the tail die, and the tail, which is not needed in the frog, disappears. In many other cases, cell death helps regulate cell numbers. In the developing nervous system, for example, cell death adjusts the number of nerve cells to match the number of target cells that require innervation. In all these cases, the cells die by apoptosis. In adult tissues, cell death exactly balances cell division. If this were not so, the tissue would grow or shrink. If part of the liver is removed in an adult rat, for example, liver cell proliferation increases to make up the loss. Conversely, if a rat is treated with the drug phenobarbital—which stimulates liver cell division (and thereby liver enlargement)—and then the phenobarbital treatment is stopped, apoptosis in the liver greatly increases until the liver has returned to its original size, usually within a week or so. Thus, the liver is kept at a constant size through the regulation of both the cell death rate and the cell birth rate. In this short section, we describe the molecular mechanisms of apoptosis and its control. In the final section, we consider how the extracellular control of cell proliferation and cell death contributes to the regulation of cell numbers in multicellular organisms.



**Abstract – Path -04**

**Tumour Suppressor Gene – rb Gene**

**Noorul Rizwana, Priyadharshini**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

The retinoblastoma protein (abbreviated pRb, RB or RB1) is a tumour suppressor protein that is dysfunctional in several major cancers. One function of pRb is to prevent excessive cell growth by inhibiting cell cycle progression until a cell is ready to divide. It is also a recruiter of several chromatin remodeling enzymes such as methylases and acetylases[citation needed]. pRb belongs to the pocket protein family, whose members have a pocket for the functional binding of other proteins. Should an oncogenic protein, such as those produced by cells infected by high-risk types of human papillomaviruses, bind and inactivate pRb, this can lead to cancer. In humans, the protein is encoded by the RB1 gene located on 13q14.1-q14.2. If both alleles of this gene are mutated early in life, the protein is inactivated and results in development of retinoblastoma cancer, hence the name Rb. Retinal cells are not sloughed off or replaced, and are subjected to high levels of mutagenic UV radiation, and thus most pRB knock-outs occur in retinal tissue (but it's also been documented in certain skin cancers in patients from New Zealand where the amount of UV radiation is significantly higher). Two forms of retinoblastoma were noticed: a bilateral, familial form and a unilateral, sporadic form. Sufferers of the former were 6 times more likely to develop other types of cancer later in life. This highlighted the fact that mutated Rb could be inherited and lent support to the two-hit hypothesis. In this case, should a cell sustain only one mutation in the other RB gene, all pRb in that cell would be ineffective at inhibiting cell cycle progression, allowing cells to divide uncontrollably and eventually become cancerous. Furthermore, as one allele is already mutated in all other somatic cells, the future incidence of cancers in these individuals is observed with linear kinetics. The working allele need not undergo a mutation per se, as loss of heterozygosity (LOH) is frequently observed in such tumours. However, in the sporadic form, both alleles would need to sustain a mutation before the cell can become cancerous. This explains why sufferers of sporadic retinoblastoma are not at increased risk of cancers later in life, as both alleles are functional in all their other cells. Future cancer incidence in sporadic Rb cases is observed with polynomial kinetics, not exactly quadratic as expected because the first mutation must arise through normal mechanisms, and then can be duplicated by LOH to result in a tumour progenitor. RB1 orthologs have also been identified in most mammals for which complete genome data are available.

*Proceedings of Eight International B.D.S. Students seminar on Basic Medical Sciences  
27<sup>th</sup> april 2013*



**Abstract – Path -05**

**Bone Resorption In Smokers**

**Looi , Shawna**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

Smoking is an important determinant of osteoporosis. There are a wide variety of mechanisms by which smoking induces bone toxic effects. A decrease in intestinal calcium absorption , low body weight and earlier menopausal age have been described. There is also a direct toxic effect on bone and alterations in blood supply of the femoral head. However, the most prominent mechanism seems to be their action on estrogen metabolism. In women, there is a decrease in estrogen urinary excretion, accelerated metabolic degradation of exogenous estrogens, increased 2-hydroxylation of estradiol to 2-hydroxyestradiol, a less active metabolite and increased hepatic cytochrome P450 activity. In men, the sex hormones derangement induced by tobacco smoking is more complex. Enzymatic inhibition of the androgen metabolism with subsequent decrease in local estrogen levels on bone has been suggested. In addition, smoking has been associated with vitamin D metabolism derangement. However, most studies of the relationship between smoking and osteoporosis have been carried out in postmenopausal women or elderly men after a long-time exposure to the toxic agent, and there is little information regarding the effect of smoking on bone in young people. Tobacco contains a complex mixture of substances, including nicotine, various nitrosamines, trace elements, and various poorly characterized substances. Many of the undesirable effects of tobacco have been attributed to nicotine, a major component of the particulate phase of tobacco smoke. Nicotine induces vascular changes in gingival tissue which are similar to the exudative vasculitis that is characteristic of the initial lesion in periodontal inflammation. Several studies have examined the *in vitro* effects of nicotine on the function of epithelial cells, fibroblasts, and osteoblasts . These results indicated that nicotine itself may augment the destruction of the gingival extracellular matrix that occurs during periodontal inflammation that is associated with smokeless tobacco use. Osteoclasts are large multinucleated cells with the unique capability of extracellular resorption of the mineralized matrices of bone, teeth, and mineralized cartilage. The actions of osteoclasts and osteoblasts are vital for skeletal development and remodeling. The balance between resorption and formation is critical for skeletal homeostasis, and an imbalance leads to diseases such as osteoporosis . Inflammatory diseases such as periodontitis also cause a local imbalance in resorption and formation. Bone resorption occurs under the aegis of a cytoskeletal structure in the osteoclast known as the ruffled border. The ruffled border forms by polarization of cytoplasmic vesicles to the bone-apposed plasma membrane into which they are inserted, leading to the enhanced complexity of osteoclasts. Mature osteoclasts secrete hydrogen ions ( $H^+$ ), which are produced via carbonic anhydrase II (CA II), from this ruffled border.



**Abstract – Path -06**

**D-Dimer Assay In DIC**

**Vallimalar, Thanya**

*Saveetha Dental College And Hospitals ,  
Saveetha University , Chennai – 600 077.*

D-dimer is a fibrin degradation product (or FDP), a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. It is so named because it contains two crosslinked D fragments of the fibrin protein. D-dimer concentration may be determined by a blood test to help diagnose thrombosis. Since its introduction in the 1990s, it has become an important test performed in patients with suspected thrombotic disorders. While a negative result practically rules out thrombosis, a positive result can indicate thrombosis but does not rule out other potential causes. Its main use, therefore, is to exclude thromboembolic disease where the probability is low. In addition, it is used in the diagnosis of the blood disorder disseminated intravascular coagulation. D-dimers are not normally present in human blood plasma, except when the coagulation system has been activated, for instance because of the presence of thrombosis or disseminated intravascular coagulation. The D-dimer assay depends on the binding of a monoclonal antibody to a particular epitope on the D-dimer fragment. Several detection kits are commercially available; all of them rely on a different monoclonal antibody against D-dimer. For some of these, the area of the D-dimer to which the antibody binds is known. The binding of the antibody is then measured quantitatively by one of various laboratory methods. D-dimer testing is of clinical use when there is a suspicion of deep venous thrombosis (DVT), pulmonary embolism (PE) or disseminated intravascular coagulation (DIC). It is under investigation in the diagnosis of aortic dissection. Various kits have a 93-95% sensitivity and about 50% specificity in the diagnosis of thrombotic disease. False positive readings can be due to various causes: liver disease, high rheumatoid factor, inflammation, malignancy, trauma, pregnancy, recent surgery as well as advanced age. False negative readings can occur if the sample is taken either too early after thrombus formation or if testing is delayed for several days. Additionally, the presence of anti-coagulation can render the test negative because it prevents thrombus extension. False values may be obtained if the specimen collection tube is not sufficiently filled (false low value if underfilled and false high value if overfilled). This is due to the dilutional effect of the anticoagulant (the blood must be collected in a 9:1 blood to anticoagulant ratio). Likelihood ratios are derived from sensitivity and specificity to adjust pretest probability.



**PHARMACOLOGY (ORAL PRESENTATIONS)**

**Abstract -Pharma -01**

**Rheumatoid Arthritis**

**Harish Kumar**

*Saveetha Dental College & Hospitals,  
Saveetha University ,Chennai-600077*

Rheumatoid arthritis (RA) is an inflammatory disease. It largely affects synovial joints, which are lined with a specialised tissue called synovium. RA typically affects the small joints of the hands and the feet, and usually both sides equally and symmetrically, although any synovial joint can be affected. It is a systemic disease and so can affect the whole body, including the heart, lungs and eyes. Drug management aims to relieve symptoms, as pain relief is the priority for people with RA, and to modify the disease process. Disease modification slows or stops radiological progression. Radiological progression is closely correlated with progressive functional impairment. No single diagnostic test definitively confirms the diagnosis of rheumatoid arthritis. However, several tests can provide objective data that increase diagnostic certainty and allow disease progression to be followed. The American College of Rheumatology Subcommittee on Rheumatoid Arthritis (ACRSRA) recommends that baseline laboratory evaluations include a complete blood cell count with differential, rheumatoid factor, and erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP). Baseline evaluation of renal and hepatic function also is recommended because these findings will guide medication choices. Joint destruction in rheumatoid arthritis begins within a few weeks of symptom onset; early treatment decreases the rate of disease progression. Therefore, it is imperative to diagnose the disease and initiate treatment as soon as possible. The ACRSRA recommends that patients with suspected rheumatoid arthritis be referred within three months of presentation for confirmation of diagnosis and initiation of treatment with disease-modifying antirheumatic drugs (DMARDs). Therapeutic goals include preservation of function and quality of life, minimization of pain and inflammation, joint protection, and control of systemic complications. Pharmacotherapy for rheumatoid arthritis generally involves a nonsteroidal anti-inflammatory drug (NSAID) for control of pain, with selective use of low-dose oral or intra-articular glucocorticoids, and initiation of a DMARD. Other analgesics also may be used, but details are outside the scope of this article. In past decades, pharmacologic treatment of rheumatoid arthritis was managed using a pyramid approach: symptom-alleviating treatment was started at diagnosis, and only with progression of symptoms were dosages changed or additional medications added.



**Abstract - Pharma -02**

**Stem cell therapy in dentistry**

**Ashwin**

*Saveetha Dental College & Hospitals,  
Saveetha University ,Chennai-600077*

Stem cells are primitive cells found in all multi-cellular organisms that are characterized by self-renewal and the capacity to differentiate into any mature cell type. These stem cells have the awesome potential for regeneration and may be used to replace or repair damaged cells, and have the potential to drastically change the treatment of conditions like cancer, Alzheimer's and Parkinson's disease and even paralysis. There are 2 main types of stem cells – embryonic stem cells and adult stem cells – which are classified according to their origin and differentiation potential. Stem cells are defined as having the capacity for extensive self-renewal and for originating at least one type of highly differentiated descendant. Research in the stem cell field grew out of findings by Canadian scientists Ernest A. McCulloch and James E. Till in the 1960. Stem cells are cells that have the following capabilities: First, they are able to continuously produce daughter cells having the same characteristics as themselves (self-renewal); secondly, they can generate daughter cells that have different, more restricted properties, and finally, they can re-populate a host *in vivo*. The stem cells based therapies could help in new advances in treating damaged teeth, inducing bone regeneration and treating neural injury as well. In the new millennium, where biology and biotechnology have replaced chemistry, we are exploring “biological solutions to biological problems.” Owing to the extraordinary advances taking place in the field of cellular and molecular biology, we are on the verge of a paradigm shift, evolving from offering simple mechanical care to consider biological solutions to health promotion, risk assessment, diagnosis, treatment, and even prognosis. Electron microscope radio-autography was used in an attempt to identify any relationship between the location and degree of differentiation of progenitor cells in the periodontal ligament (PDL). Ligament fibroblasts were classified on the basis of their nuclear/cytoplasmic ratio, and their distance to the closest blood vessel measured. It was determined that an undifferentiated paravascular progenitor cell population exists, and that the PDL also contains progenitor cells showing a range of cytodifferentiation. This demonstrated that postnatal stem cells can be retrieved from solid-frozen human periodontal ligament.



**Abstract - Pharma -03**

**Liposomal drug delivery-nanotechnology**

**Swarna meenakshi**

*Saveetha Dental College & Hospitals,  
Saveetha University ,Chennai-600077*

Nanotechnology in general and as it relates to drug delivery in humans has been illustrated in a two-part presentation, the first part of which is this paper. In this paper, nanotechnology in nature, history of nanotechnology and methods of synthesis are discussed, while also outlining its applications, benefits and risks. Nanotechnology is an industrial revolution, based on integration of disciplines that could change every facet of human life. Some examples of changes brought about by reduction in particle sizes to the physical, chemical and biological properties of substances, compounds and drug products have been cited. The benefits of nanotechnology are enormous and so these benefits should be maximized while efforts are made to reduce the risks. The technology enables the delivery of drugs that are poorly water soluble and can provide means of bypassing the liver, thereby preventing the first pass metabolism. Nanotechnology increases oral bioavailability of drugs due to their specialized uptake mechanisms such as absorptive endocytosis and are able to remain in the blood circulation for a long time, releasing the incorporated drug in a controlled fashion, leading to less plasma fluctuations and minimized side-effects. Nanoscale size nanostructures are able to penetrate tissues and are easily taken up by cells, allowing for efficient delivery of drugs to target sites of action. Nanotechnology drug delivery system has been used to treat breast cancer. Approximately 25% of all breast cancer patients have human epidermal growth factor receptor 2 (HER2), a specific type of cancerous cell identified in this study that is considered aggressive because it spreads quickly and has a low survival rate. Treatment of breast cancer varies according to the size, stage and rate of growth, as well as the type of tumor. There are currently three main categories of post-surgery therapies available: hormone blocking therapy, chemotherapy and monoclonal antibodies (mAbs) therapy. In the case of antibodies, the drugs are paired with saline and delivered intravenously into the body. Targeting specific cells or proteins, the antibodies block specific cell receptors to destroy cancer cells and suppress tumor growth. However, these drugs are absorbed in the body and have limited lifetimes and effectiveness when injected directly into the bloodstream.



**PHARMACOLOGY -POSTER PRESENTATIONS**

**Abstract – Pharma -01**

**Teratogenic effects of various drugs**

**Monica Gayathri & Pavithra.G**

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai-600077*

A congenital malformation is an anatomical or structural abnormality present at birth. Congenital malformations may be caused by genetic factors or environmental insults or a combination of the two that occur during prenatal development. Most common congenital malformations demonstrate multifactorial inheritance with a threshold effect and are determined by a combination of genetic and environmental factors. During the first two weeks of gestation, teratogenic agents usually kill the embryo rather than cause congenital malformations. Major malformations are more common in early embryos than in newborns; however, most severely affected embryos are spontaneously aborted during the first six to eight weeks of gestation. During organogenesis between days 15 to 60, teratogenic agents are more likely to cause major congenital malformations. The risk of a birth defect for any baby is about four per cent, regardless of the circumstances during pregnancy. This means that even a woman who strictly avoids drugs while pregnant may still have a baby with a birth defect. Medicines in Australia are given a risk category by the Australian Drug Evaluation Committee for drugs used in pregnancy according to their documented safety information. This category applies only to recommended doses. The classifications include: A – Drugs that have been taken by a large number of pregnant women without any proven increase risk of birth defect. B – Drugs that have been taken by only a limited number of pregnant women. Human data is lacking and they are further categorised based on available data from animal studies. B1 – animal studies have not shown any increased risk. B2 – animal studies are limited, but there does not seem to be any increased risk. B3 – animal studies show an increased risk, but it is not clear if this risk applies to humans. C – Drugs that, due to their effects, may cause harm to the fetus without causing birth defects. These effects may be reversible. D – Drugs that have caused or may cause birth defects; however, the health benefit may outweigh the risk. X – Drugs that have a high risk of birth defects and should not be used during pregnancy. The variety of these associated syndromes with specific teratogenic agents is discussed in the poster.



**Abstract - pharma -02**

**Poisoning**

**Lavanya & Nikitha Narayanan**

*Saveetha Dental College & Hospitals,  
Saveetha University, Chennai-600077*

Most people who died of an overdose involving prescription opioids had taken other drugs right before their death. The most common prescription drugs taken in combination with opioids are anti-anxiety medications and antidepressants. A poisoning occurs when a person's exposure to a natural or manmade substance has an undesirable effect. A drug poisoning occurs when that substance is an illegal, prescription, or over-the-counter drug. Most fatal poisonings in the United States result from drug poisoning. Poisoning can be classified as self-harm or suicide when the person wants to harm himself; assault or homicide when the person wants to harm another; and unintentional, also known as "accidental," when no harm is intended. Unintentional drug poisoning includes drug overdoses resulting from drug misuse, drug abuse, and taking too much of a drug for medical reasons. The advancement of medicine and chemistry complemented and were complemented by pharmacology during the eighteenth and nineteenth centuries. The modern age of pharmacology might be marked by the research of Paul Ehrlich (1854-1915), the Father of Chemotherapy. Winner of the 1908 Nobel Prize in Medicine and Physiology for his pioneering work in immunology, Ehrlich developed the concept of drugs which were tissue and cell specific - his magic bullets. The main factor in determining whether or not a drug or poison will be excreted via the urinary tract is its lipophilicity. If the material is lipophilic it can be reabsorbed by passive diffusion. The glomerular filtration rate individual tubule secretory systems, and tubule exchange systems will help to establish excretion rates. Drugs (poisons) can mimic or block the effects of naturally-occurring neurotransmitters. Therefore, many of them will be agonists or antagonists. Sometimes the action of the drug will be other than that of agonist or antagonist and its overall effect will be indirect. This is understandable if we look at the various ways xenobiotics might affect the neurotransmitter systems. The Amanita muscaria mushroom from which muscarine is isolated is also psychoactive. It was believed at first that muscarine was the primary CNS agent. However, more detailed research indicated that muscarine only constituted 0.003% of the fungus. Other species of Inocybe and Clitocybe have more muscarine than muscaria. Other isoxazole components of the muscaria mushroom, such as ibotenic acid and its metabolites, are the main causes of amanita intoxication.



**PHYSIOLOGY (ORAL PRESENTATIONS)**

**Abstract - Physio -01**

**Relation between Menopause and Tooth Loss**

**Ssneha.B.R**

*Saveetha dental college and hospitals,  
saveetha university, chennai-600077.*

Menopausal women have an increased susceptibility to periodontal disease. After menopause, almost no oestrogen is secreted by ovaries. So, oestrogen deficiency leads to increased osteoclastic activity, reduced deposition of calcium and phosphates, bone loss and inflammatory processes. It would be better to diagnose osteoporosis and periodontal disease at the earliest so that the early treatment can prevent fractures and tooth loss. Systemic bone loss has been predicted as a risk factor for periodontal disease but the relations between these two diseases are obscure. Loss of oestrogen also causes some physiological changes in menopausal women which include hot flushes, dyspnoea, irritability, anxiety, decreased strength and calcification of bone throughout the body. Recent researches suggest that hormone therapy and bisphosphonate drugs may be prescribed to protect against alveolar bone loss and slow down the progression of periodontal disease. Few believe that use of bisphosphonates can lead to osteonecrosis of the jaw but this is rare and the reported cases were mostly cancerous patients who received large amounts of bisphosphonates intravenously and had other risk factors for it. Physicians should be vigilant for dental problems and encourage their patients to follow good oral hygiene and take up regular dental care especially menopausal women. Menopause can cause oral health problems. Nowadays many are unaware but physicians ought to keep this in mind. The processes that lead to bone loss in the spine and hips can also lead to bone loss in the alveolar bone of the jaws, resulting in the periodontal disease, loose teeth and tooth loss. In periodontal disease, alveolar bone loss is a notable result of inflammatory and immune response to the products of bacterial plaque. Osteoporosis is the foremost cause of morbidity, mortality and medical expense. Burning mouth syndrome is often reported in women especially after menopause and is characterized by burning sensation in the tongue or in the oral sites usually in the absence of clinical and laboratory findings. These patients usually complain of burning, dryness and taste alterations. Benzodiazepines, tricyclic antidepressants or anticonvulsants are prescribed in these patients along with Topical capsaicin.



**Abstract - Physio -02**

**Effect of Stress on Our Body**

**Anirudha**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077.*

Stress is the body's reaction to any change that requires an adjustment or response. The body reacts to these changes with physical, mental, and emotional responses. Stress is a normal part of life. The human body is designed to experience stress and react to it. Stress can be positive, keeping us alert and ready to avoid danger. Stress becomes negative when a person faces continuous challenges without relief or relaxation between challenges. Distress can lead to physical symptoms including headaches, upset stomach, elevated blood pressure, chest pain, and problems sleeping. Research suggests that stress also can bring on or worsen certain symptoms or diseases. Researchers have long suspected that the stressed-out, type A personality has a higher risk of high blood pressure and heart problems. Stress might have a direct effect on the heart and blood vessels. Doctors do know that sudden emotional stress can be a trigger for serious cardiac problems, including heart attacks. People who have chronic heart problems need to avoid acute stress as much as they can. Many studies have shown that stress can worsen asthma. Some evidence suggests that a parent's chronic stress might even increase the risk of developing asthma in their children. The kids with stressed out parents had a substantially higher risk of developing asthma. Excess fat in the belly seems to pose greater health risks than fat on the legs or hips and unfortunately, that's just where people with high stress seem to store it. Stress causes higher levels of the hormone cortisol and that seems to increase the amount of fat that's deposited in the abdomen. Stress can worsen diabetes in two ways. First, it increases the likelihood of bad behaviors, such as unhealthy eating and excessive drinking. Second, stress seems to raise the glucose levels of people with type 2 diabetes directly. Stress is considered one of the most common triggers for headaches not just tension headaches, but migraines as well. It's probably no surprise that chronic stress is connected with higher rates of depression and anxiety. Gastrointestinal problems, it doesn't cause ulcers. However, it can make them worse. Stress is also a common factor in many other GI conditions, such as chronic heartburn (GERD) and IBS. Stress might worsen Alzheimer's disease, causing its brain lesions to form more quickly. Some researchers speculate that reducing stress has the potential to slow down the progression of the disease. There's actually evidence that stress can affect how you age. Researchers found that a particular region of the chromosomes showed the effects of accelerated aging. Stress seemed to accelerate aging about 9 to 17 additional years.

*Proceedings of Eight Intenational B.D.S.Students seminar on Basic Medical Sciences  
27<sup>th</sup> april 2013*



**Abstract - Physio -03**

**Anorexia Nervosa Balled Dance**

**Aishwariya.A.S,**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077.*

Anorexia is a growing disorder in our society. Eating disorders affect thousands of people throughout the world. A select group, young female ballet dancers are molded into thinking that the only way to succeed with their dream is to be thin. Anorexia nervosa is a serious psychological and physiological disorder. Due to cultural ideals of feminine beauty, young women feel a strong desire to be thinner than their bodies naturally tend to be. As a result, they change their eating patterns and they may develop eating disorders. An anorexic will avoid eating to the point of emaciation where the damage done to her body is irreversible. This is a common trait in a dancer due to her busy schedule of dance classes. This disease is most commonly found in young girls in upper middle class families but it can develop in both sexes of all ages. A common reason for older patients of anorexia to develop the disease is depression. It can cause three changes external, internal and psychological. The external changes are: Thirty percent or more of body weight to be lost leading to emaciation, dry skin, hair loss and growth of fine body hair. The internal changes that occur in the body are: Irregular or complete loss of the menstrual cycle (amenorrhea), low blood pressure, Oedema (swelling), loss in bone density, liver damage, dental problems, infertility, loss of insulating layer of fat leading to extreme temperature sensitivity, cramps, diarrhoea, dehydration, slowed or irregular heart beat and dilation of intestines. The psychological changes in the body are: Withdrawal and isolation in society, impaired neuromuscular functions, fainting spells, insomnia, weakness, hyperactivity, depression, electrolyte imbalance, psychological, physical and biochemical disturbances, and eventual death. There are two types of anorexia. In the restricting type of anorexia, weight loss is achieved by restricting calories (following drastic diets, fasting, and exercising to excess). In the purging type of anorexia, weight loss is achieved by vomiting or using laxatives and diuretics. Symptoms and sign which include Using diet pills, laxatives, or diuretics Abusing water pills, herbal appetite suppressants, prescription stimulants, ipecac syrup, and other drugs for weight loss. Throwing up after eating frequently disappearing after meals or going to the bathroom. May run the water to disguise sounds of vomiting or reappear smelling like mouthwash or mints. Compulsive exercising following a punishing exercise regimen aimed at burning calories.



**Abstract - Physio -04**

**Dwarfism**

**Zhulfia**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Dwarfism refers to a group of conditions characterised by shorter than normal skeletal growth. This shortness can be manifested in the arms and legs or trunk. There are over 300 conditions that cause abnormal skeletal growth and dwarfism. Achondroplasia is the most common type of short-limb dwarfism, occurring in around one in 25,000 children with both sexes at equal risk. This type of skeletal dysplasia (abnormal skeletal growth) is usually diagnosed at birth. There are two main categories of dwarfism -- disproportionate and proportionate. Disproportionate dwarfism is characterized by an average-size torso and shorter arms and legs or a shortened trunk with longer limbs. In proportionate dwarfism, the body parts are in proportion but shortened. Causes of proportionate dwarfism include metabolic and hormonal disorders such as Dwarfism can be caused by any of more than 200 conditions. Spondyloepiphyseal dysplasia refers to a group of conditions characterized by a shortened trunk, which may not become apparent until a child is between 5 and 10 years old. Diastrophic dysplasia occurs in about one in 100,000 births. People who have it tend to have shortened forearms and calves (this is known as mesomelic shortening). People with disproportionate short stature (DSS) may also have one or more of the following features or symptoms which include Bowed legs, Scoliosis is the spine curves to one side, Kyphosis is the upper spine curves outwards, Back problems in certain conditions, these spinal problems may lead to compression of the spinal cord and nerves leaving the spine. This causes pain and numbness in the hips, knees and legs, and can make it difficult to move around, Top-heavy head in comparison to the rest of the body, this makes it hard to balance, Sleep apnoea is this sleep disorder causes irregular breathing at night and excessive sleepiness during the day, Hearing difficulties in young children may have hearing difficulties and problems with speech and language, Osteoarthritis is this type of arthritis particularly affects the hip and knee joints in DSS. If other joints are also affected, it may be very difficult to move around. In some conditions, the joints cannot be fully straightened, Weakness in the neck in certain conditions, there may be weakness of the joints between bones in the neck, which must be identified and treated early and Hydrocephalus is excess fluid in the brain cavities. There is no single treatment for dwarfism. Individual differences, such as bone growth disorders, sometimes can be treated through surgery, some hormone disorders can be treated through medication, and by hormone replacement therapy; this treatment must be done before the child's growth plate's fuse. Individual accommodations, such as specialized furniture, are often used by people with dwarfism.



**Abstract - Physio -05**

**Leukaemia**

**Kavya.R,**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Leukaemia is cancer of the white blood cells. Acute leukaemia means the condition progresses rapidly and aggressively and requires immediate treatment. Acute leukaemia is classified according to the type of white blood cells that are affected by cancer. There are two main types: lymphocytes is mostly used to fight viral infections, myeloid cells – which perform a number of different functions, such as fighting bacterial infections, defending the body against parasites and preventing the spread of tissue damage. When you have leukaemia, the bone marrow starts to make a lot of abnormal white blood cells, called leukemic cells. They don't do the work of normal white blood cells, they grow faster than normal cells, and they don't stop growing when they should. Symptoms include pale skin, tiredness, breathlessness, having repeated infections over a short space of time, unusual and frequent bleeding. The immature white blood cells begin to rapidly disrupt the normal balance of cells in the blood. This means that the body does not have enough red blood cells or platelet cells. This can cause symptoms of anaemia, such as tiredness, and increase the risk of excessive bleeding. Acute myeloid leukaemia is more common in people aged 65 or over. In adults, chronic lymphocytic leukemia (CLL) and acute myelogenous leukemia (AML) are the most common leukemias. In children, the most common leukemia is acute lymphoblastic leukemia (ALL). Childhood leukemias also include acute myelogenous leukemia (AML) and other myeloid leukemias, such as chronic myelogenous leukemia (CML) and juvenile myelomonocytic leukemia (JMML). The types of leukemia are further grouped based on how quickly the leukemia develops and grows: Acute leukemias start suddenly, developing within days or weeks. The number of leukemia cells in the blood can rise very fast and blood cells cannot do their jobs. Chronic leukemias develop slowly over months or years. They may not cause any symptoms early in the disease. Symptoms start to appear as the number of leukemia cells in the blood or bone marrow increases. The cause or causes of acute myeloid leukaemia are uncertain, but known risk factors include: exposure to high levels of radiation, exposure to benzene, a chemical used in manufacturing that is also found in cigarettes. Symptoms of leukemia Blood clotting is poor - As immature white blood cells crowd out blood platelets, which are crucial for blood clotting, the patient may bruise or bleed easily and heal slowly - he may also develop petechiae (a small red to purple spot on the body, caused by a minor hemorrhage). Affected immune system - The patient's white blood cells, which are crucial for fighting off infection, may be suppressed or not working properly. The patient may experience frequent infections, or his immune system may attack other good body cells. Anaemia - As the shortage of good red blood cells grows the patient may suffer from anaemia - this may lead to difficult or labored respiration (dyspnoea) and pallor (skin has a pale colour caused by illness



**Abstract - Physio -06**

**Effect of Pineal Gland on Sleep**

**Nandhini.G**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

The pineal gland or epiphysis synthesizes and secretes melatonin, a structurally simple hormone that communicates information about environmental lighting to various parts of the body. Ultimately, melatonin has the ability to entrain biological rhythms and has important effects on reproductive function of many animals. The light-transducing ability of the pineal gland has led some to call the pineal the "third eye". The pineal gland is a small organ shaped like a pine cone (hence its name). It is located on the midline, attached to the posterior end of the roof of the third ventricle in the brain. The pineal varies in size among species; in humans it is roughly 1 cm in length, whereas in dogs it is only about 1 mm long. To observe the pineal, reflect the cerebral hemispheres laterally and look for a small greyish bump in front of the cerebellum. The images below show the pineal gland of a horse in relation to the brain. Melatonin is probably not a major regulator of normal sleep patterns, but undoubtedly. The effect of melatonin on reproductive systems can be summarized by saying that it is anti-gonadotropic. In other words, melatonin inhibits the secretion of the gonadotropic hormones luteinizing hormone and follicle stimulating hormone from the anterior pituitary. Much of this inhibitory effect seems due to inhibition of gonadotropin-releasing hormone from the hypothalamus, which is necessary for secretion of the anterior pituitary hormones. One practical application of melatonin's role in controlling seasonal reproduction is found in its use to artificially manipulate cycles in seasonal breeders. For example, sheep that normally breed only once per year can be induced to have two breeding seasons by treatment with melatonin. It has some effect. One topic that has garnered a large amount of interest is using melatonin alone, or in combination with phototherapy, to treat sleep disorders. There is some indication that melatonin levels are lower in elderly insomniacs relative to age matched non-insomniacs, and melatonin therapy in such cases appears modestly beneficial in correcting the problem. The amount of melatonin found in spinal fluid is much higher than the amount in our bloodstream, and it controls our circadian rhythm—our sleep and wake cycle. The pineal gland creates more of the antioxidant at night, in the absence of light, which helps to dictate our sleeping patterns. Studies on the pineal gland and melatonin have contributed to chronobiology, the branch of science which explores rhythms in living organisms. We all know people who strongly identify with being a "morning person" or "night owl," and chronobiology has ways of assessing these chronotypes. In the dark months of winter, seasonal affective disorder (SAD) seems to be the result of low melatonin levels. Interestingly, aside from our eyes, the pineal gland is the only other organ in our body that detects light.



**Abstract - Physio -07**

**Haemorrhagic Shock**

**Deepthy Nair**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Haemorrhagic shock is a condition of reduced tissue perfusion, resulting in the inadequate delivery of oxygen and nutrients that are necessary for cellular function. Whenever cellular oxygen demand outweighs supply, both the cell and the organism are in a state of shock. Shock associated with the sudden and rapid loss of significant amounts of blood. Severe traumatic injuries often cause such blood losses. This results in inadequate perfusion to meet the metabolic demands of cellular function. Death occurs within a relatively short time unless transfusion quickly restores normal blood volume. Haemorrhagic shock often accompanies secondary shock. On a multicellular level, the definition of shock becomes more difficult because not all tissues and organs will experience the same amount of oxygen imbalance for a given clinical disturbance. Clinicians struggle daily to adequately define and monitor oxygen utilization on the cellular level and to correlate this physiology to useful clinical parameters and diagnostic tests. The 4 classes of shock are Hypovolemic, Vasogenic (septic), Cardiogenic, Neurogenic. Significant loss of intravascular volume may lead sequentially to hemodynamic instability, decreased tissue perfusion, cellular hypoxia, organ damage, and death. Pertaining to or characterized by haemorrhage are hemorrhagic enteritis, hemorrhagic bowel disease of swine, hemorrhagic diathesis, hemorrhagic disease an undifferentiated disease manifested by unprovoked hemorrhage and caused by any one of a number of factors. It is also seen in hemophilia, epizootic hemorrhagic disease of deer, warfarin, canine ehrlichiosis, hemorrhagic syndrome hemorrhagic syndrome a widespread disease of domestic fowl causing significant losses due to death in birds about 5 to 9 weeks of age. The cause may be multifactorial but viruses are suspected to hemorrhagic septicemia a septicemic pasteurellosis of cattle and other ruminants, rarely of pigs and horses. It is caused by *Pasteurella multocida* type 1 (or B) rarely D or E, and characterized by a sudden onset of high fever, dyspnea, salivation, hot painful subcutaneous swellings and submucosal petechiae and death in about 24 hours. It is called also septicemic pasteurellosis, el guedda. Occurs also in finfish, caused by opportunist bacteria including *Aeromonas*, *Pseudomonas* spp, hemorrhagic shock play an important role. This paper addresses the pathophysiology and treatment of hypovolemic shock produced by hemorrhage, which is also known as hemorrhagic shock.



**PHYSIOLOGY (POSTER PRESENTATIONS)**

**Abstract - Physio -01**

**Neurotransmitters**

**Ramya & Ketaki Kamath**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Neurotransmitters are endogenous chemicals that transmit signals from a neuron to a target cell across a synapse. Neurotransmitters are packaged into synaptic vesicles clustered beneath the membrane in the axon terminal, on the presynaptic side of a synapse. They are released into and diffuse across the synaptic cleft, where they bind to specific receptors in the membrane on the postsynaptic side of the synapse. Release of neurotransmitters usually follows arrival of an action potential at the synapse, but may also follow graded electrical potentials. Low level "baseline" release also occurs without electrical stimulation. Many neurotransmitters are synthesized from plentiful and simple precursors, such as amino acids, which are readily available from the diet and which require only a small number of biosynthetic steps to convert. Acetylcholine was the first neurotransmitter to be discovered. It was isolated in 1921 by a German biologist named Otto Loewi, who would later win the Nobel Prize for his work. Acetylcholine has many functions: It is responsible for much of the stimulation of muscles, including the muscles of the gastro-intestinal system. It is also found in sensory neurons and in the autonomic nervous system, and has a part in scheduling REM (dream) sleep. In 1946, a Swedish biologist by the name of Ulf von Euler discovered norepinephrine (formerly called noradrenalin). He also won a Nobel Prize. Norepinephrine is strongly associated with bringing our nervous systems into "high alert." It is prevalent in the sympathetic nervous system, and it increases our heart rate. Aids in the smooth transmission of messages in the brain and the body. Plays large role in regulation of mood, appetite, memory and learning. A lack of serotonin may result in low self-esteem, depression and/or aggression and our blood pressure. Our adrenal glands release it into the blood stream, along with its close relative epinephrine (aka adrenalin). It is also important for forming memories. As noted earlier, synapses are the junctions where neurons pass signals to other neurons, muscle cells, or gland cells. Most nerve-to-nerve signaling and all known nerve-to-muscle and nerve-to-gland signaling rely on chemical synapses at which the presynaptic neuron releases a chemical neurotransmitter that acts on the postsynaptic target cell.



**Abstract - Physio -02**

**Second Hand Smoker**

**Aafrin & Nivedha**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

When you breathe in smoke that comes from the end of a lit cigarette, cigar, or pipe (side stream smoke) or that is exhaled by a smoker (mainstream smoke), you're inhaling almost the same amount of chemicals as the smoker breathes in. Tobacco smoke contains more than 4,000 different chemical compounds, more than 50 of which are known to cause cancer. These are just a few of the chemicals that float into your lungs when you are exposed to second hand smoke such as Hydrogen cyanide is a highly poisonous gas used in chemical weapons and pest control, Benzene is a component of gasoline, Formaldehyde is a chemical used to embalm corpses and Carbon monoxide is a poisonous gas found in car exhaust. Second hand smoke (SHS) is classified as a "known human carcinogen" (cancer-causing agent) by the US Environmental Protection Agency (EPA), the US National Toxicology Program, and the International Agency for Research on Cancer (IARC – a branch of the World Health Organization). Tobacco smoke is a mixture of gases and particles. It contains more than 7,000 chemical compounds. More than 250 of these chemicals are known to be harmful, and at least 69 are known to because cancer. SHS has been linked to lung cancer. There is also some evidence suggesting it might be linked to lymphoma, leukemia, and brain tumors in children, and cancers of the larynx (voice box), pharynx (throat), nasal sinuses, brain, bladder, rectum, stomach, and breast in adults. IARC reported in 2009 that parents who smoked before and during pregnancy were more likely to have a child with hepatoblastoma. This rare liver cancer is thought to start while the child is still in the uterus. Compared with non-smoking parents, the risk was about twice as high if only one parent smoked, but nearly 5 times higher when both parents smoked. Second hand smoke (SHS) is also known as environmental tobacco smoke (ETS). SHS is a mixture of 2 forms of smoke that come from burning tobacco: Side stream smoke – smoke from the lighted end of a cigarette, pipe, or cigar and Mainstream smoke – the smoke exhaled by a smoker. SHS has been linked to lung cancer. There is also some evidence suggesting it might be linked to lymphoma, leukemia, and brain tumors in children, and cancers of the larynx (voice box), pharynx (throat), nasal sinuses, brain, bladder, rectum, stomach, and breast in adults.



**Abstract - Physio -03**

**Tetrology of Fallot**

**Shabana & Dhanvandh**

*Saveetha dental college and hospitals,*

*Saveetha University, Chennai-600077*

Tetralogy of Fallot (TOF) is a congenital heart defect which is classically understood to involve four anatomical abnormalities of the heart (although only three of them are always present). Tetralogy of Fallot results from low oxygenation of blood due to the mixing of oxygenated and deoxygenated blood in the left ventricle via the ventricular septal defect (VSD) and preferential flow of the mixed blood from both ventricles through the aorta because of the obstruction to flow through the pulmonary valve. This is known as a right. The primary symptom is low blood oxygen saturation with or without cyanosis from birth or developing in the first year of life. If the baby is not cyanotic then it is sometimes referred to as a "pink tet." Other symptoms include a heart murmur which may range from almost imperceptible to very loud, difficulty in feeding, failure to gain weight, retarded growth and physical development, dyspnea on exertion, clubbing of the fingers and toes, and polycythemia. Children with tetralogy of Fallot may develop "tet spells." It is the most common cyanotic heart defect, and the most common cause of blue baby syndrome. Tetralogy of Fallot involves four heart defects: A large ventricular septal defect (VSD), pulmonary stenosis, right ventricular hypertrophy, an overriding aorta. The clinical features of tetralogy of Fallot are directly related to the severity of the anatomic defects. Infants often display the following: Difficulty with feeding, Failure to thrive, Episodes of bluish pale skin during crying or feeding, Exertional dyspnea, usually worsening with age. Physical findings include the following: Most infants are smaller than expected for age, Cyanosis of the lips and nail bed is usually pronounced at birth, After age 3-6 months, the fingers and toes show clubbing, A systolic thrill is usually present anteriorly along the left sternal border, A harsh systolic ejection murmur (SEM) is heard over the pulmonic area and left sternal border, During cyanotic episodes, murmurs may disappear, In individuals with aortopulmonary collaterals, continuous murmurs may be auscultated. The following may also be noted: RV predominance on palpation, A bulging left hemithorax, Aortic ejection click, Squatting position (compensatory mechanism), Scoliosis (common), Retinal engorgement and Hemoptysis.



**Abstract - Physio -04**

**Stem Cell Therapy for Heart**

**Sanchana & Sai vignesh**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

The heart muscle relies on a steady flow of oxygen-rich blood to nourish it and keep it pumping. During a heart attack, that blood flow is interrupted by a blockage in an artery. Without blood, the area of heart fed by the affected artery begins to die and scar tissue forms in the area. Over time, this damage can lead to heart failure, especially when one heart attack comes after another. Though the heart is a tough organ, the damaged portions become unable to pump blood as efficiently as they once could. People who have had a heart attack therefore may face a lifetime of maintenance therapy medications and other treatments aimed at preventing another heart attack and helping the heart work more efficiently. Like any other therapy, injecting stem cells into the heart can fail or cause side effects. If the stem cells are taken from an unrelated donor, the body's immune system may reject them. And if the injected cells can't communicate with the heart's finely tuned electrical system, they may produce dangerous heart rhythms (arrhythmias). So far, side effects haven't been a major issue, though, and that has encouraged investigators to push onward. "Most of the stem cell therapies for the heart have been surprisingly safe, but long-term effects are still a concern. These cells most likely mediate endogenous mechanisms for minor repair and for replacement of ongoing cell turnover within the adult heart. More importantly, they may represent a therapeutic target that, if enhanced, could induce cardiac self-repair. These cells were shown to be clonogenic and capable of trans differentiation in vitro, and they induced both myocardial and vascular regeneration after MI. Laugwitz and colleagues isolated a population of cardiac precursor cells from postnatal mouse hearts using isl-1 transcription factor as a cell marker. These cells are c-kit- and stem cell antigen-1-negative but are capable of differentiation into cardiomyocytes with electrical and contractile properties. Cardiac stem cells can be harvested from patients and expanded ex vivo to generate large numbers of cells. This suggests that the left ventricular (LV) dysfunction in ischemic cardiomyopathy may be due to a defect in or deficiency of functionally competent cardiac stem cells. To date, there are no clinical trials of human cardiac stem cells. However, Smith et al<sup>38</sup> demonstrated that cardiospheres could be grown from human endomyocardial biopsy specimens. These cardiospheres represent an easily accessible option for autologous stem cell therapy, making the possibility of clinical testing of this approach feasible. The Specialized Centers for Cell-Based Therapy initiative of the NHLBI has funded clinical trials of cardiac stem cells that should begin in the near future.

*Proceedings of Eight International B.D.S. Students seminar on Basic Medical Sciences  
27<sup>th</sup> april 2013*



**Abstract - Physio -05**

**Infertility and Relation with Obesity**

**Sneha Susan & Nausheen**

*Saveetha dental college and hospitals,*

*Saveetha University, Chennai-600077*

Obesity is a rising epidemic affecting millions worldwide. Obesity also significantly affects a woman's capacity to carry on a term pregnancy. Obesity is defined by an extraordinarily high Body Mass Index (BMI) in which the index is a reflection of body fat content. Around 1 in 4 women are at least overweight as per surveys and studies. The rates are higher among women facing problems of conception. Obesity decreases the rates of successful pregnancy in natural conception cycles. Estrogen is found in two places in the female body, in the ovaries where the majority is produced and in the adrenal glands, which produce a small amount. Estrogens are synthesized from cholesterol in the ovaries in response to pituitary hormones. So if there is too much cholesterol in your diet you will have an oversupply or imbalance of estrogen it may affect your ovary function and disrupt your natural monthly ovulation cycle. Obesity in women can also increase risk of miscarriages and impair the outcomes of assisted reproductive technologies and pregnancy, when the body mass index exceeds 30 kg/m. The main factors implicated in the association may be insulin excess and insulin resistance. These adverse effects of obesity are specifically evident in polycystic ovary syndrome (PCOS). Ovulatory disorders are the leading cause of female infertility, resulting in the disruption of hormones, menstrual cycles, and conception. Women who are overweight are less likely to respond to fertility drugs as being overweight will interfere with the absorption of medication used in treating fertility. Many clinics often refuse further treatment until a person weight is at a treatable level. Approximately 15% of such disorders are linked to weight disorders, mainly being overweight and obese. In women who are undergoing reproductive therapies by accelerating and augmenting their ovulation cycles for better chances of conception, obesity may reduce the rates of pregnancy as well. High levels of leptin and low levels of adiponectin may also reduce rates of conception. Fertility can be partially restored if weight loss can be achieved. Awareness of the importance of body weight on reproduction enables couples to maintain appropriate body weight or to correct a body weight disorder before subjecting themselves to expensive, time consuming infertility evaluation and treatment.



**Abstract - Physio -06**

**Memory**

**Sudharshana & Madhupriya**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Memory is the process in which information is encoded, stored, and retrieved. Encoding allows information that is from the outside world to reach our senses in the forms of chemical and physical stimuli. In this first stage we must change the information so that we may put the memory into the encoding process. Storage is the second memory stage or process. Memory makes us. If we couldn't recall the who's, what's, where's, and when's of our everyday lives, we'd never be able to manage. We mull over ideas in the present with our short-term (or working) memory, while we store past events and learned meanings in our long-term (episodic or semantic) memory. What's more, memory is malleable—and it tends to decay with age. So stay sharp by reading our articles on the riddles of recollection. This entails that we maintain information over periods of time. Finally the third Short-term memory allows recall for a period of several seconds to a minute without rehearsal. Its capacity is also very limited when working at Bell Laboratories, conducted experiments showing that the store of short-term memory was items. Modern estimates of the capacity of short-term memory are lower, typically of the order of 4–5 items, however, memory capacity can be increased through a process called chunking. For example, in recalling a ten-digit telephone number, a person could chunk the digits into three groups: first, the area code, then a three-digit chunk and lastly a four-digit chunk. This method of remembering telephone numbers is far more effective than attempting to remember a string of 10 digits; this is because we are able to chunk the information into meaningful groups of numbers. This may be reflected in some countries in the tendency to display telephone numbers as several chunks of two to four numbers. Short-term memory is believed to rely mostly on an acoustic code for storing information, and to a lesser extent a visual code. Test subjects had more difficulty recalling collections of letters that were acoustically similar. Confusion with recalling acoustically similar letters rather than visually similar letters implies that the letters were encoded acoustically. Memory of written language may rely on acoustic components, generalisations to all forms of memory cannot be made. Process is the retrieval of information that we have stored. We must locate it and return it to our consciousness. Some retrieval attempts may be effortless due to the type of information. There are three main stages in the formation and retrieval of memory which are Encoding, receiving, processing and combining of received information, Storage: creation of a permanent record of the encoded information and Retrieval, recall or recollection: calling back the stored information in response to some cue for use in a process or activity. The loss of memory is described as forgetfulness, or as a medical disorder, amnesia.

*Proceedings of Eight Intenational B.D.S.Students seminar on Basic Medical Sciences  
27<sup>th</sup> april 2013*



**Abstract - Physio -07**

**Saliva – A Diagnostic Tool**

**Shrada & Hema**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Saliva is a complex fluid consisting of secretions from the major and minor salivary glands. Gland-specific saliva can be used to diagnose any pathology from the specific major salivary gland. Whole saliva has serum constituents that are derived from the local vasculature of the salivary glands and gingival crevicular fluid. Saliva, as a diagnostic fluid, has distinctive advantages over serum as whole saliva can be collected non-invasively by individuals with limited training using simple equipment. The ability to monitor health status, disease onset and progression, and treatment outcome through non-invasive means is a most desirable goal in the health care promotion and delivery. There are three prerequisites to materialize this goal: specific biomarkers associated with a health or disease state; a non-invasive approach to detect and monitor the biomarkers; and the technologies to discriminate the biomarkers. A national initiative catalyzed by the National Institute of Dental & Craniofacial Research (NIDCR) has created a roadmap to achieve these goals through the use of oral fluids as the diagnostic medium to scrutinize the health and/or disease status of individuals. There are compelling reasons to use saliva as a diagnostic fluid to monitor health and diseases. It meets the demands for inexpensive, non-invasive and easy to use diagnostic methods. As a clinical tool, saliva has many advantages over serum. Saliva is easy to collect, store and ship and can be obtained at low cost in sufficient quantities for analysis. For patients, the non-invasive collecting techniques dramatically reduce anxiety and discomfort and simplify procurement of repeated samples for longitudinal monitoring over time. For professionals, saliva collection is safer than blood tests, which could expose health care providers to HIV or hepatitis virus. Saliva is also easier to handle for diagnostic procedures since it does not clot, lessening the manipulations required. Saliva-based diagnostics are therefore more accessible, accurate, less expensive and present less risk to the patient than current methodologies. This paper is to explore the diagnostic applications of saliva in systemic and oral diseases. Analysis of saliva can offer a cost-effective approach to screen for a larger population. Salivary analysis may be useful for diagnosing systemic therapeutic levels of drug.



**Abstract - Physio -08**

**Cerebrospinal Fluid**

**Harshitha & Subiksha**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Cerebrospinal fluid (CSF), clear, colourless liquid that fills and surrounds the brain and the spinal cord and provides a mechanical barrier against shock. Cerebrospinal fluid (CSF) is a clear colorless bodily fluid found in the brain and spine. It is produced in the choroid plexus of the brain. It acts as a cushion or buffer for the cortex, providing a basic mechanical and immunological protection to the brain inside the skull, and it serves a vital function in cerebral autoregulation of cerebral blood flow. Formed primarily in the ventricles of the brain, the cerebrospinal fluid supports the brain and provides lubrication between surrounding bones and the brain and spinal cord. When an individual suffers a head injury, the fluid acts as a cushion, dulling the force by distributing its impact. The fluid helps to maintain pressure within the cranium at a constant level. CSF is produced in the brain by modified ependymal cells in the choroid plexus (approx. 50-70%) and the remainder is formed around blood vessels and along ventricular walls. It circulates from the lateral ventricles to the foramina of Monro (Interventricular foramina), third ventricle, aqueduct of Sylvius (Cerebral aqueduct), fourth ventricle, foramen of Magendie (Median aperture) and foramina of Luschka (Lateral apertures), subarachnoid space over brain and spinal cord. It should be noted that the CSF moves in a pulsatile manner throughout the CSF system with nearly zero net flow. CSF is reabsorbed into venous sinus blood via arachnoid granulations. An increase in the volume of blood or brain tissue results in a corresponding decrease in the fluid. CSF is slightly alkaline and is about 99 percent water. When CSF pressure is elevated, cerebral blood flow may be constricted. When disorders of CSF flow occur, they may therefore affect not only CSF movement but also craniospinal compliance and the intracranial blood flow, with subsequent neuronal and glial vulnerabilities. The venous system is also important in this equation. Infants and patients shunted as small children may have particularly unexpected relationships between pressure and ventricular size, possibly due in part to venous pressure dynamics. This may have significant treatment implications, but the underlying pathophysiology needs to be further explored. There are about 100 to 150 ml of CSF in the normal adult human body. Examination of the CSF may diagnose a number of diseases.



**Abstract - Physio -09**

**Physiological Interpretation of Thyroid Function Test**

**Shruthi & Sharayu**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Thyroid function tests (TFTs) is a collective term for blood tests used to check the function of the thyroid. Thyroid disorders can be difficult to detect clinically, but thyroid function tests can assist in making a diagnosis. Measuring thyroid stimulating hormone is the first step. If it is abnormal, free thyroxine should be measured. The major thyroid hormone secreted by the thyroid gland is thyroxine, also called T<sub>4</sub> because it contains four iodine atoms. To exert its effects, T<sub>4</sub> is converted to triiodothyronine (T<sub>3</sub>) by the removal of an iodine atom. This occurs mainly in the liver and in certain tissues where T<sub>3</sub> acts, such as in the brain. The amount of T<sub>4</sub> produced by the thyroid gland is controlled by another hormone, which is made in the pituitary gland located at the base of the brain, called thyroid stimulating hormone (abbreviated TSH). The amount of TSH that the pituitary sends into the blood stream depends on the amount of T<sub>4</sub> that the pituitary sees. If the pituitary sees very little T<sub>4</sub>, then it produces more TSH to tell the thyroid gland to produce more T<sub>4</sub>. Once the T<sub>4</sub> in the blood stream goes above a certain level, the pituitary's production of TSH is shut off. In fact, the thyroid and pituitary act in many ways like a heater and a thermostat. A raised concentration of thyroid stimulating hormone with a low concentration of free thyroxine suggests hypothyroidism. A low concentration of thyroid stimulating hormone with a high concentration of free thyroxine suggests hyperthyroidism. Measuring thyroid autoantibodies may help establish the cause of the dysfunction. Different assays can give different results, and tests of thyroid function may be affected by drugs and intercurrent illness. The inverse log-linear relationship between free T<sub>4</sub> and TSH means that TSH concentrations are sensitive indicators of thyroid dysfunction. A raised TSH suggests hypothyroidism<sup>2</sup> while a low TSH suggests hyperthyroidism. There are other causes of low TSH concentrations, notably hypothalamicpituitary disease, but this is very uncommon in the general population. The finding of an abnormal TSH should lead to measurement of free T<sub>4</sub> levels. Interpretation of thyroid function tests may be particularly difficult if the patient is systemically ill. Starvation or severe illness can be associated with deregulation of TSH secretion and reduced deiodination of T<sub>4</sub> to T<sub>3</sub> (the 'sick euthyroid' syndrome). Low TSH and T<sub>3</sub> levels are typical and can cause diagnostic confusion.



**Abstract - Physio -10**

**Brain Tumour**

**Haritha & Jayashree**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

A brain tumor is an abnormal growth of cells within the brain, which can be cancerous or non-cancerous (benign). It is defined as any intracranial tumor created by abnormal and uncontrolled cell division, normally either in the brain itself (neurons, glial cells (astrocytes, oligodendrocytes, ependymal cells), lymphatic blood vessels), in the cranial nerves (myelin-producing Schwann cells), in the brain envelopes (meninges), skull, pituitary and pineal gland, or spread from cancers primarily located in other organs (metastatic tumors). There most common type of primary brain tumors among adults are astrocytoma, meningioma, and oligodendroglioma. The most common type of primary brain tumors in children are medulloblastoma, grade I or II astrocytoma, ependymoma, and brain stem glioma. The most common symptoms of brain tumors include headaches; numbness or tingling in the arms or legs; seizures, memory problems; mood and personality changes; balance and walking problems; nausea and vomiting; changes in speech, vision, or hearing. Brain tumors are diagnosed by the doctor based on the results of a medical history and physical examination and results of a variety of specialized tests of the brain and nervous system. Options for brain tumor treatment include surgery, radiation therapy, and chemotherapy.



**Abstract - Physio -11**

**Referred Pain**

**Krittika & Manishankari**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Referred pain, also called reflective pain, is pain perceived at a location other than the site of the painful stimulus. An example is the case of ischemia brought on by a myocardial infarction (heart attack), where pain is often felt in the neck, shoulders, and back rather than in the chest, the site of the injury. Referred pain is when the pain is located away from or adjacent to the organ involved. Referred pain would be when a person has pain only in their jaw or left arm, but not in the chest. Myocardial infarction can rarely present as referred pain and this usually occurs in people with diabetes or older age. There are several proposed mechanisms for referred pain. Currently there is no definitive consensus regarding which is correct. The cardiac general visceral sensory pain fibers follow the sympathetics back to the spinal cord and have their cell bodies located in thoracic dorsal root ganglia 1-4(5). As a general rule, in the thorax and abdomen, general visceral afferent (GVA) pain fibers follow sympathetic fibers back to the same spinal cord segments that gave rise to the preganglionic sympathetic fibers. The central nervous system (CNS) perceives pain from the heart as coming from the somatic portion of the body supplied by the thoracic spinal cord segments 1-4(5). Also, the dermatomes of this region of the body wall and upper limb have their neuronal cell bodies in the same dorsal root ganglia (T1-5) and synapse in the same second order neurons in the spinal cord segments (T1-5) as the general visceral sensory fibers from the heart. The CNS does not clearly discern whether the pain is coming from the body wall or from the viscera, but it perceives the pain as coming from somewhere on the body wall, i.e. substernal pain, left arm/hand pain, jaw pain. Characteristics which include The size of referred pain is related to the intensity and duration of on-going/evoked pain, Temporal summation is a potent mechanism for generation of referred muscle pain, Central hyper excitability is important for the extent of referred pain. Patients with chronic musculoskeletal pains have enlarged referred pain areas to experimental stimuli. The proximal spread of referred muscle pain is seen in patients with chronic musculoskeletal pain and very seldom is it seen in healthy individuals. Modality-specific somatosensory changes occur in referred areas, which emphasize the importance of using a multimodal sensory test regime for assessment.



**Abstract - Physio -12**

**Sleep**

**Lavanya & Arundhathy Nair**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Sleep is a naturally recurring state characterized by altered consciousness, relatively inhibited sensory activity, and inhibition of nearly all voluntary muscles. It is distinguished from wakefulness by a decreased ability to react to stimuli, and it is more easily reversible than being in hibernation or a coma. During sleep, most systems in an animal are in a heightened anabolic state, accentuating the growth and rejuvenation of, e.g., the immune, nervous, skeletal and muscular systems. Humans may suffer from a number of sleep disorders. These include such dyssomnias as insomnia, hypersomnia, and sleep apnea; such parasomnias as sleepwalking and REM behaviour disorder; and the circadian rhythm sleep disorders. There are so many things that seem more interesting or important than getting a few more hours of sleep, but just as exercise and nutrition are essential for optimal health and happiness, so is sleep. The quality of your sleep directly affects the quality of your waking life, including your mental sharpness, productivity, emotional balance, creativity, NREM stage 1: This is a stage between sleep and wakefulness. The muscles are active, and the eyes roll slowly, opening and closing moderately. NREM stage 2: theta activity In this stage, it gradually becomes harder to awaken the sleeper; the alpha waves of the previous stage are interrupted by abrupt activity called sleep spindles and K-complexes. NREM stage 3: Formerly divided into stages 3 and 4, this stage is called slow-wave sleep (SWS). SWS is initiated in the preoptic area and consists of delta activity, high amplitude waves at less than 3.5 Hz. The sleeper is less responsive to the environment; many environmental stimuli no longer produce any reactions. REM: The sleeper now enters rapid eye movement (REM) where most muscles are paralyzed. REM sleep is turned on by acetylcholine secretion and is inhibited by neurons that secrete serotonin. This level is also referred to as paradoxical sleep because the sleeper, although exhibiting EEG waves similar to a waking state, is harder to arouse than at any other sleep stage. Vital signs indicate arousal and oxygen consumption by the brain is higher than when the sleeper is awake.<sup>[9]</sup> An adult reaches REM approximately every 90 minutes, with the latter half of sleep being more dominated by this stage. REM sleep occurs as a person returns to stage 1 from a deep sleep. The function of REM sleep is uncertain but a lack of it will impair the ability to learn complex tasks. One approach to understanding the role of sleep is to study the deprivation of it. During this period, the EEG pattern returns to high frequency waves which look similar to the waves produced while the person is awake physical vitality, and even your weight.



**Abstract - Physio -13**

**Errors of Refraction**

**Indhulekha & Preethika**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Refractive errors are vision problems that happen when the shape of the eye keeps you from focusing well. The cause could be the length of the eyeball (longer or shorter), changes in the shape of the cornea, or aging of the lens. The word "ametropia" can be used interchangeably with "refractive error" or "image formation defects." Types of ametropia include myopia, hyperopia and astigmatism. They are frequently categorized as spherical errors and cylindrical errors. Spherical errors occur when the optical power of the eye is either too large or too small to focus light on the retina. People with refraction error frequently have blurry vision. Myopia: When the optics is too powerful for the length of the eyeball one has myopia or near-sightedness. This can arise from a cornea with too much curvature (refractive myopia) or an eyeball that is too long (axial myopia). Myopia can easily be corrected with a concave lens which causes the divergence of light rays before they reach the retina. Hyperopia: When the optics are too weak for the length of the eyeball, one has hyperopia or farsightedness. This can arise from a cornea with not enough curvature (refractive hyperopia) or an eyeball that is too short (axial hyperopia). This can be corrected with convex lenses which cause light rays to converge prior to hitting the retina. Astigmatism: People with a simple astigmatic refractive error see contours of a particular orientation as blurred, but see contours with orientations at right angles as clear. When one has a cylindrical error, one has astigmatism. This is caused by a deviation in the shape of the cornea, a shape other than spherical. This defect can be corrected with refracting light more in one area of the eye than the other. Cylindrical lenses serve this purpose. Presbyopia: When the flexibility of the lens declines typically due to age. Individual would experience difficulty in reading etc. This causes the individual to need visual assistance such as bifocal lenses. Four common refractive errors are Myopia, or near-sightedness - clear vision close up but blurry in the distance, Hyperopia, or farsightedness - clear vision in the distance but blurry close up, Presbyopia - inability to focus close up as a result of aging, Astigmatism - focus problems caused by the cornea. The most common symptom is blurred vision. Other symptoms may include double vision, haziness, glare or halos around bright lights, squinting, headaches, or eye strain.



**Abstract - Physio -14**

**Mechanism of anti-smoking drug**

**Nagaranjitha & Kaviya Srinithi**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Abrupt smoking cessation can affect the metabolism of drugs. Cigarette smoking induces the activity of human cytochromes P450 (CYP) 1A2 and 2B6. These enzymes metabolise several clinically important drugs, including clozapine, olanzapine and methadone. Decreased CYP1A2 activity after smoking cessation increases the risk of adverse drug reactions, with reports of increased toxicity from clozapine and olanzapine. Predicting the required dose reduction of drugs metabolised by CYP1A2 after smoking cessation is challenging. Therapeutic drug monitoring should be used when possible. Nicotine replacement therapy does not influence CYP1A2 activity. Genetic polymorphisms of the CYP1A2 gene contribute to extensive inter-individual variability in drug metabolism and are associated with altered inducibility of gene expression in smokers. There are also marked ethnic differences in the distribution of CYP1A2 mutations, meaning that different ethnic groups respond differently. Warfarin's less active R isomer is eliminated to a minor extent by CYP1A2 Smoking may therefore potentially interact with warfarin by increasing its clearance and reducing its effect. A recent meta-analysis showed that smoking appeared to increase the warfarin dose requirement by 12%, resulting in an extra 2.26 mg per week compared with non-smoking. Consequently, INR should be closely monitored when there is a change in patients 'smoking status. Caffeine is highly dependent on CYP1A2 for its metabolism. Smokers require up to four times as much caffeine as non-smokers to achieve the same plasma caffeine concentration. Caffeine can increase the concentration of clozapine and olanzapine. Cinciripini noted that this is significant because varenicline which is thought to partially stimulate dopamine -- the neurotransmitter associated with reward that lessens overall withdrawal symptoms -- also supports another suggested mechanism of action that involves binding the nicotine receptor for a longer period of time.



**Abstract - Physio -15**

**Myasthenia Gravis**

**Hansini & Harini**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Myasthenia gravis is a chronic autoimmune neuromuscular disease characterized by varying degrees of weakness of the skeletal (voluntary) muscles of the body. Myasthenia gravis is caused by a defect in the transmission of nerve impulses to muscles. Myasthenia Gravis comes from the Greek and Latin words meaning "grave muscular weakness." The voluntary muscles of the entire body are controlled by nerve impulses that arise in the brain. These nerve impulses travel down the nerves to the place where the nerves meet the muscle fibres. Nerve fibers do not actually connect with muscle fibers. There is a space between the nerve ending and muscle fibers; this space is called the neuromuscular junction. In most cases, the first noticeable symptom is weakness of the eye muscles. In others, difficulty in swallowing and slurred speech may be the first signs. The degree of muscle weakness involved in MG varies greatly among patients, ranging from a localized form that is limited to eye muscles (ocular myasthenia), to a severe and generalized form in which many muscles--sometimes including those that control breathing--are affected. Symptoms, which vary in type and severity, may include asymmetrical ptosis (a drooping of one or both eyelids), diplopia (double vision) due to weakness of the muscles that control eye movements, an unstable or waddling gait, weakness in arms, hands, fingers, legs, and neck, a change in facial expression, dysphagia (difficulty in swallowing), shortness of breath and dysarthria (impaired speech, often nasal due to weakness of the velar muscles). Myasthenia gravis is an autoimmune channelopathy: it features antibodies directed against proteins that are naturally present in the body. While various similar diseases have been linked to immunologic cross-reaction with an infective agent, there is no known causative pathogen that could account for myasthenia. There is a slight genetic predisposition: particular HLA types seem to predispose for MG (B8 and DR3 with DR1 more specific for ocular myasthenia). Up to 75% of patients have an abnormality of the thymus; 10% have a thymoma, a tumor (either benign or malignant) of the thymus, and other abnormalities are frequently found. The disease process generally remains stationary after thymectomy (removal of the thymus). The symptoms of myasthenia gravis may include eye muscle weakness, eyelid drooping (ptosis), blurry or double vision (diplopia), unstable gait, a change in facial expression, difficulty in swallowing, shortness of breath, impaired speech, and weakness in the arms, hands, fingers, legs, and neck.



**Abstract - Physio -16**

**Neurological Diagnosis – A Detective Study**

**Jyothi & Gayathri Devi**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

The brain, spinal cord, and nerves make up the nervous system. There are more than 600 neurologic diseases. Major types include Diseases caused by faulty genes, such as Huntington's disease and muscular dystrophy. Problems with the way the nervous system develops, such as spina bifida, Degenerative diseases, where nerve cells are damaged or die, such as Parkinson's disease and Alzheimer's disease, Diseases of the blood vessels that supply the brain, such as stroke. Injuries to the spinal cord and brain, Seizure disorders, such as epilepsy, Cancer, such as brain tumors, infections, such as meningitis. Interventions for neurological disorders include preventative measures, lifestyle changes, physiotherapy or other therapy, neurorehabilitation, pain management, medication, or operations performed by neurosurgeons. The World Health Organization estimated in 2006 that neurological disorders and their sequelae (direct consequences) affect as many as one billion people worldwide, and identified health inequalities and social stigma/discrimination as major factors contributing to the associated disability and suffering.



**Abstract - Physio -17**

**Asthma**

**Giftson Rajarajan & Balaji**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Asthma is a common chronic inflammatory disease of the airways characterized by variable and recurring symptoms, reversible airflow obstruction and bronchospasm. Common symptoms include wheezing, coughing, chest tightness, and shortness of breath. Asthma is thought to be caused by a combination of genetic and environmental factors. Its diagnosis is usually based on the pattern of symptoms, response to therapy over time and spirometry. It is clinically classified according to the frequency of symptoms, forced expiratory volume in one second (FEV1), and peak expiratory flow rate. Asthma may also be classified as atopic (extrinsic) or non-atopic (intrinsic) where atopic refers to a predisposition toward developing type 1 hypersensitivity reactions. Asthma symptoms, which include coughing, wheezing, and chest tightness, are common in an asthma attack. Sometimes asthma is called bronchial asthma or reactive airway disease. Asthma is the result of chronic inflammation of the airways which subsequently results in increased contractibility of the surrounding smooth muscles. This among other factors leads to bouts of narrowing of the airway and the classic symptoms of wheezing. The narrowing is typically reversible with or without treatment. People with a family history of allergies or asthma are more prone to developing asthma. Many people with asthma also have allergies. This is called allergic asthma. Asthma is characterized by recurrent episodes of wheezing, shortness of breath, chest tightness, and coughing. Sputum may be produced from the lung by coughing but is often hard to bring up. During recovery from an attack it may appear pus like due to high levels of white blood cells called eosinophil. Symptoms are usually worse at night and in the early morning or in response to exercise or cold air. Some people with asthma rarely experience symptoms, usually in response to triggers, whereas others may have marked and persistent symptoms. Occupational asthma is caused by inhaling fumes, gases, dust or other potentially harmful substances while on the job.



**Abstract - Physio -18**

**Infant Respiratory Distress Syndrome**

**Aravind & Ashika**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Hyaline membrane disease (HMD), also called respiratory distress syndrome (RDS), is a condition that causes babies to need extra oxygen and help breathing. HMD is one of the most common problems seen in premature babies. The more premature the baby, the higher the risk and the more severe the HMD. HMD typically worsens over the first 48 to 72 hours and then improves with treatment. More than 90 percent of babies with HMD survive. The lungs of infants with respiratory distress syndrome are developmentally deficient in a material called surfactant, which helps prevent collapse of the terminal air-spaces (the future site of alveolar development) throughout the normal cycle of inhalation and exhalation. Surfactant is a complex system of lipids, proteins and glycoproteins which are produced in specialized lung cells called Type II cells or Type II pneumocytes. The diagnosis is made by the clinical picture and the chest xray, which demonstrates decreased lung volumes (bell-shaped chest), absence of the thymus (after about 6 hours), a small (0.5–1 mm), discrete, uniform infiltrate (sometimes described as a "ground glass" appearance or as of recently described as "diffuse airspace and interstitial opacities") that involves all lobes of the lung, and air-bronchogram. Neonatal RDS occurs in infants whose lungs have not yet fully developed. The disease is mainly caused by a lack of a slippery substance in the lungs called surfactant. This substance helps the lungs fill with air and keeps the air sacs from deflating. Surfactant is present when the lungs are fully developed. Other factors that can increase the risk of RDS include: A brother or sister who had RDS, Diabetes in the mother, Cesarean delivery or induction of labor before is full-term. Problems with delivery that reduce blood flow to the baby, Multiple pregnancy (twins or more), Rapid labour. Most of the time symptoms appear within minutes of birth. However, they may not be seen for several hours. Symptoms may include: Bluish color of the skin and mucus membranes (cyanosis). Brief stop in breathing (apnoea). Decreased urine output, Grunting, Nasal flaring, Rapid breathing, Shallow breathing, Shortness of breath and grunting sounds while breathing, Unusual breathing movement (such as drawing back of the chest muscles with breathing). Taking steps to prevent premature birth can help prevent neonatal RDS. Good prenatal care and regular checkups beginning as soon as a woman discovers she is pregnant can help avoid premature birth. The risk of RDS can also be lessened by the proper timing of a Cesarean delivery if needed. They are often given to pregnant women between 24 and 34 weeks of pregnancy who seem likely to deliver in the next week. At times it may be possible to give other medicines to delay labor and delivery until the steroid medication has time to work. This treatment may cut down on the risks from RDS. It may also help prevent other complications from early delivery. However, it will not totally remove the risks.



**Abstract - Physio -19**

**Hyperthyroidism**

**Arthi & Indulekka**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Hyperthyroidism (overactive thyroid) is a condition in which your thyroid gland produces too much of the hormone thyroxine. Hyperthyroidism can accelerate your body's metabolism significantly, causing sudden weight loss, a rapid or irregular heartbeat, sweating, and nervousness or irritability. Hyperthyroidism means your thyroid makes too much thyroid hormone. Your thyroid is a gland in the front of your neck. It controls your metabolism, which is how your body turns food into energy. It also affects your heart, muscles, bones, and cholesterol. Graves' disease causes most hyperthyroidism. In Graves' disease, the body's natural defence (immune) system attacks the thyroid gland. The thyroid fights back by making too much thyroid hormone. Palpitations; Heat intolerance; Nervousness; Insomnia; Breathlessness; Increased bowel movements; Light or absent menstrual periods; Fatigue; Fast heart rate; Trembling hands; Weight loss; Muscle weakness; Warm moist skin; Hair loss; Staring gaze like many thyroid problems, it often runs in families. Sometimes hyperthyroidism is caused by a swollen thyroid or small growths in the thyroid called thyroid nodules. Common symptoms include Difficulty concentrating, Fatigue, Frequent bowel movements, Goitre (visibly enlarged thyroid gland) or thyroid nodules, Hand tremor, Heat intolerance, Increased appetite Increased sweating, Irregular menstrual periods in women, Nervousness, Restlessness, Sleep problems, Weight loss (or weight gain, in rare cases Symptoms which include nervous, moody, weak, or tired, shake, your heart may beat fast, or you may have problems breathing, hot and sweaty or have warm, red, itchy skin, have more bowel movements than usual, have fine, soft hair that is falling out, lose weight even though you eat the same or more than usual. Thyroid crisis (storm), also called thyrotoxicosis, is a sudden worsening of hyperthyroidism symptoms that may occur with infection or stress. Fever, decreased alertness, and abdominal pain may occur. Patients need to be treated in the hospital. Other complications of hyperthyroidism include Heart problems such as fast heart rate, abnormal heart rhythm, heart failure, Osteoporosis. Surgery-related complications, including, Scarring of the neck, Hoarseness due to nerve damage to the voice box, Low calcium level due to damage to the parathyroid glands (located near the thyroid gland), Hypothyroidism (underactive thyroid)



**Abstract - Physio -20**

**Polycystic Ovary Syndrome**

**Deepika & Priti**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders among females. PCOS is a complex, heterogeneous disorder of uncertain etiology, but there is strong evidence that it can, to a large degree, be classified as a genetic disease. Polycystic ovarian syndrome (PCOS), also known by the name Stein-Leventhal syndrome, is a hormonal problem that causes women to have a variety of symptoms. It's The principal features are anovulation, which results in irregular menstruation, amenorrhea, and ovulation-related infertility; excessive amounts or effects of androgenic (masculinizing) hormones, which results in acne and hirsutism; and insulin resistance, which is often associated with obesity, Type 2 diabetes, and high cholesterol levels. Finding that the ovaries appear polycystic on ultrasound is common, but it is not an absolute requirement in all definitions of the disorder. The symptoms and severity of the syndrome vary greatly among affected women should be noted that most women with the condition have a number of small cysts in the ovaries. However, women may have cysts in the ovaries for a number of reasons, and it is the characteristic constellation of symptoms, rather than the presence of the cysts themselves, that is important in establishing the PCOS diagnosis. PCOS occurs in 5% to 10% of women and is the most common cause of infertility in women. Symptoms tend to be mild at first. You may have only a few symptoms or a lot of them. The most common symptoms are: Acne, Weight gain and trouble losing weight, Extra hair on the face and body, Often women get thicker and darker facial hair and more hair on the chest, belly, and back; Thinning hair on the scalp; Irregular periods; often women with PCOS have fewer than nine periods a year; some women have no periods. Others have very heavy bleeding; Fertility problems; many women who have PCOS have trouble getting pregnant (infertility). Depression; most women with PCOS grow many small cysts camera on their ovaries. That is why it is called polycystic ovary syndrome. The cysts are not harmful but lead to hormone imbalances. PCOS symptoms may begin in adolescence with menstrual irregularities, or a woman may not know she has PCOS until later in life when symptoms and/or infertility occur. Women of all ethnicities may be affected.



**Abstract - Physio -21**

**Clinical Manifestation of Oedema**

**Archana & Aishwarya.J**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Edema is swelling caused by excess fluid trapped in your body's tissues. Although edema can affect any part of your body, it's most commonly noticed in your hands, arms, feet, ankles and legs. Edema can be the result of medication, pregnancy or an underlying disease like often heart failure, kidney disease or cirrhosis of the liver. An alteration in capillary hemodynamics that favours the movement of fluid from the vascular space into the interstitium. Such movement requires a change in one or more components of Starling's law: increased capillary hydrostatic pressure, decreased capillary oncotic pressure (ie, hypoalbuminemia), and/or increased capillary permeability. The retention of dietary or intravenously administered sodium and water by the kidneys. The importance of the kidneys in the development of edema should not be underestimated. Edema (other than localized edema as with an allergic reaction) does not become clinically apparent until the interstitial volume has increased by 2.5 to 3 L, an amount that is almost equal to the plasma volume. Symptoms will depend on the cause of edema Symptoms of peripheral edema include swelling of the affected area(s), which causes the surrounding skin to "tighten." The swelling from peripheral edema is gravity-dependent (it will increase or decrease with changes in body position). For example, if a person is lying on their back (supine), the swelling will not appear in the legs, but will appear in the area around the sacrum. The skin over the swollen area appears tight and shiny, and often when pressure is applied to the area with a finger, an indentation appears. This is called pitting edema. Thus, patients would develop marked hemoconcentration and shock if the plasma volume were not maintained by renal retention of sodium and water. Taking medication to remove excess fluid and reducing the amount of salt in your food usually relieves edema. When edema is a sign of an underlying disease, the disease itself requires separate treatment. Edema is a normal response of the body to inflammation or injury. For example, a twisted ankle, a bee sting, or a skin infection will all result in edema in the involved area. In some cases, such as in an infection, this may be beneficial. Increased fluid from the blood vessels allows more infection-fighting white blood cells to enter the affected area.



**Abstract - Physio -22**

**Alzheimers Disease**

**Ankita & Arshiya**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Alzheimer's disease (AD), also known in medical literature as Alzheimer disease, is the most common form of dementia. There is no cure for the disease, which worsens as it progresses, and eventually leads to death. Alzheimer's disease (AD) is a slowly progressive disease of the brain that is characterized by impairment of memory and eventually by disturbances in reasoning, planning, language, and perception. The main risk factor for Alzheimer's disease is increased age. There are also genetic risk factors and others. In Alzheimer's disease, the connections between brain cells and the brain cells themselves degenerate and die, causing a steady decline in memory and mental function. Although we still don't know how the Alzheimer's disease process begins, it seems likely that damage to the brain starts a decade or more before problems become evident. During the preclinical stage of Alzheimer's disease, people are free of symptoms but toxic changes are taking place in the brain. Abnormal deposits of proteins form amyloid plaques and tau tangles throughout the brain, and once-healthy neurons begin to work less efficiently. Over time, neurons lose their ability to function and communicate with each other, and eventually they die. Before long, the damage spreads to a nearby structure in the brain called the hippocampus, which is essential in forming memories. As more neurons die, affected brain regions begin to shrink. By the final stage of Alzheimer's, damage is widespread, and brain tissue has shrunk significantly. Current Alzheimer's disease medications and management strategies may temporarily improve symptoms. Alzheimer's disease is diagnosed when: 1) a person has sufficient cognitive decline to meet criteria for dementia; 2) the clinical course is consistent with that of Alzheimer's disease; 3) no other brain diseases or other processes are better explanations for the dementia. Many other causes of dementia are screened for prior to diagnosing Alzheimer's disease. The management of Alzheimer's disease consists of medication based and non-medication based treatments. Alzheimer's disease research has developed to a point where scientists can look beyond treating symptoms to think about addressing underlying disease processes. In ongoing clinical trials, scientists are looking at many possible interventions, such as immunization therapy, cognitive training, physical activity, antioxidants, and the effects of cardiovascular and diabetes treatments.



**Abstract - Physio -23**

**Physiology of Aging**

**Geheni & Christopher**

*Saveetha dental college and hospitals,  
Saveetha University, Chennai-600077*

Aging is a process that begins at conception and continues for as long as we live. Changes that occur with aging fall into three categories: physical, psychological, and social. As changes begin to happen in one area of a person's life, most likely the other two will be affected as well. There is a wide variation among individuals in the rate of aging and, within the same person, different organ systems age at different rates. At any given time throughout our lifespan, the body reflects its genetic component and its environmental experience. As a person grows old, organ function is challenged both by disease and by the physiological processes associated with ageing. In clinical geriatric medicine, it is pathological change rather than decaying physiology which is the major cause of morbidity and mortality. For example, age-related loss in muscle power is dwarfed by the motor disability precipitated by a cerebral infarction, although the former may be of some importance when attempting to rehabilitate the patient. In other words, our bodies reflect our genetic capacity to adapt and repair, as well as the cumulative damage from disease processes. Aging highlights our strengths and our weaknesses. In our society we currently think of the "young old" as being around 65 to 74 years of age, the "middle old" 75 to 84 and the "old old" 85 years +. With advancing age, all of the body systems eventually demonstrate reduced efficiency, slowed building & replacement and actual loss of tissue. While an individual's aging experience is unique, there are generalizations which can be observed for each of the body systems. Muscle strength and flexibility decrease with age. A major reason muscles tend to become weaker is that there is less lean muscle mass and they shrink from lack of use. It happens whether a person is young or old. As muscles are not used, they don't work as well. The capacity to assure strenuous effort gradually declines. You eventually become less able to walk as far or lift as much as you used to. This is because skeletal muscles atrophy (shrink with age). Conditioning is the most dominant factor influencing this rate of decline.