



# ORAL CANCER & CLINICAL RESEARCH

**Dear all faculty members and researchers,**

It is our pleasure to release the 9th issue of Research Newsletter. The theme of the present issue is **“Oral Cancer & Clinical Research”**.

Oral cancer is a highly relevant problem of global public health, especially for dental surgeons. It is located within the top 10 ranking incidence of cancers and despite the progress in research and therapy, survival has not improved significantly in the last years, representing a continuing challenge for biomedical science.

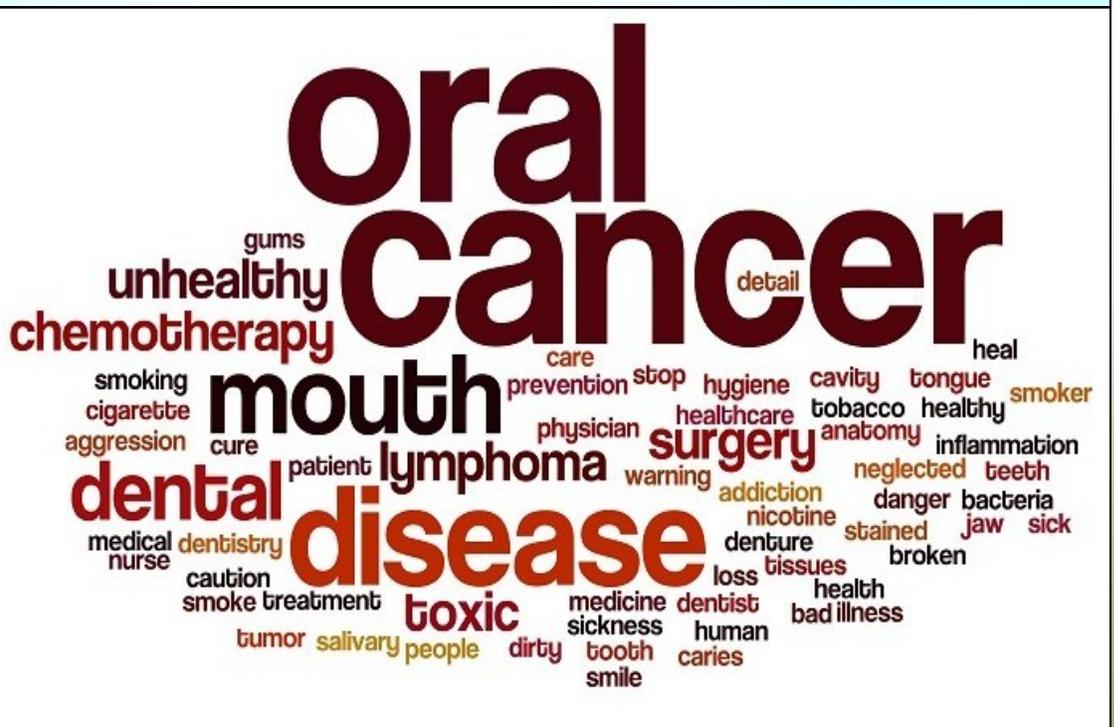
Research Cell is sincerely thankful to Dr. Navin Shah, MDS, Professor & Head, KMSDCH, for an exclusive interview on oral cancer which will be helpful in providing guidance to our faculty and to

the students to frame some innovative concepts in this research thrust area.

Research Cell aims to promote research culture in all the constituent institutes of Sumandeep Vidyapeeth by providing assistance to all the researchers. We believe that the students, faculty and clinicians should step forward for research proposals based on hypothesis and produce some innovations leading to patent filing.

Research Cell feels that this issue of Newsletter will update our faculty and researchers with regard to its activities. Suggestions are always welcome to make this communication more meaningful.

**-Director Research**



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## INTRODUCTION

Worldwide oral cancer is creating an alarming situation and it's a matter of global concern as it is the 11th most common carcinoma around the globe.

Sharon D'souza *et al*; *Biomedicine & Pharmacology*, 2018 stated that 75% of oral cancers are related to lifestyle choices. The distribution of oral cancer is approximately 32% in buccal mucosa, 22% in tongue, 11% in lower lip, 11% in palate, 8% in vestibule, 5% in alveolus, 5% in floor of the mouth, and 3% in gingiva. The risk factors are many including smoking, betel nut, tobacco chewing, drinking, poor nutrition, HPV virus, mouth washes with a high alcohol content, poor oral hygiene, immune system suppression, age, gender, etc. Other risk factors include genetic factors, mate drinking and chronic trauma.

Screening methods employed is for early detection and prediction of oral cancer which includes OralCDx, Vizilite, VizilitePlus, Micolux/DL, Orascope DK, and VELscope.



# RECENT ADVANCES IN TREATMENT OF ORAL CANCER



## DNA Changes

One of the change mostly found in DNA of oral cancer cells is mutation of p53 gene that produces a protein which prevent cells from growing too much and help to destroy cells with DNA damage that are too extensive to repair. Damage to this gene can lead to increased abnormal cell growth and formation of cancer. *Yadong Li et. al., Oncology Letters, 2015*

Another change found in some oral cancers is that DNA from a papillomavirus (HPV) becomes mixed with patient's own DNA. Some parts of this HPV DNA instrust cells to produce proteins that inactivate p53 gene. Studies are being carried out to determine whether tests to detect HPV DNA may help to diagnose cancer. *(Jiron J. et. al., American Journal of Otolaryngology, 2014)*

## Tumor Growth Factors

Growth factors naturally occurring in the body promote cell growth by attaching to growth factor receptors present on outer surface of the cells. Some cancer cells contain more growth factor receptors and thus show faster growth than normal cells. One of the growth factors linked to oral and oropharyngeal cancers is epidermal growth factor or EGF. New drugs are being tested clinically that recognize cells having more EGF receptors. *(Bhairavi Vajaria et.al, Tumor & Microenvironment, 2018)*

## New Chemotherapy

Intraarterial chemotherapy (injection of drugs into arteries feeding the cancer) is being tested in combination with radiation therapy to improve its effectiveness.

Another new approach is intralesional chemotherapy (injecting the drug directly into the tumor). Until recently, success with this approach was limited as the drug tended to spread to nearby tissues and the entire body quite quickly. Recent advancement in preparing the drug solution, so that it remains localized in the tumor, have renewed the interest in intralesional chemotherapy, and preliminary results have been promising. *(M. Ohmae, et al. J Clinical Onchology, 2017; DOI: 10.1200/JCO.2017.35.15\_suppl.e17569 )*



# RECENT ADVANCES IN TREATMENT OF ORAL CANCER



## Vaccines

Vaccines are being studied as a way to treat people with cancer by helping their immune to recognize and attack the cancer cells. Since some oral and oropharyngeal cancers contain DNA from human papillomaviruses, vaccines against these viruses are being studied as a treatment for these cancers.

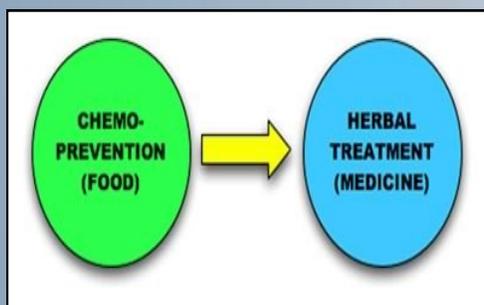


## Gene therapy

New discoveries about how changes in the DNA of cells in the oral cavity and oropharynx cause these cells to become cancerous are being applied to experimental treatments intended to reverse these changes. Clinical trials are testing whether it is possible to replace abnormal tumor suppressor genes (such as the p53 gene) of oral cancer cells with a normal copy, to restore normal growth control. Another type of gene therapy adds new genes to the cancer cells to make them more susceptible to being killed by certain drugs. (Roopa Rao et. al., *Journal of Medicine, Radiology, Pathology & Surgery*, 2015)

## Nanochemoprevention

The administration of an agent to stop a cancer from occurring is known as chemoprevention. These agents can be a drug or natural product like Retinoids,  $\beta$ -carotene, N-acetyl cysteine, Vitamin-E, Interferons, Curcumin and polyphenols like Phenolic acids, Flavonoids, Resveratrol, Lignans and Ellagic Acid.



A novel approach which makes use of nanotechnology is developed and a new theory named “Nano-chemoprevention”, where the chemopreventive agents are encapsulated in biocompatible nanoparticles which enhance the efficacy of phytoconstituents and improve their bioavailability, the prime weak point of nutritional therapy.

*Aarti Bhatia et. al., Cancers, 2017)*

## RESEARCH THEME RELATED ARTICLES

### Genome wide profiling in oral squamous cell carcinoma identifies a four genetic marker signature of prognostic significance

#### Background:

Cancers of the oral cavity are primarily oral squamous cell carcinomas(OSCCs). Many of the OSCCs present at late stages with an exceptionally poor prognosis. A probable limitation in management of patients with OSCC lies in the insufficient knowledge pertaining to the linkage

<https://journals.plos.org/plosone/article/doi/10.1371/journal.pone.0174865>

### Research Articles



### Genomics for Oral Cancer Biomarker Research

#### Abstract

Oral cancer is one of the most common malignancies worldwide with aggressive behavior. Despite the advancements in preventive measures, diagnosis, and management of oral cancer, the 5-year survival rate has been low. For the last few decades, basic and advanced molecular techniques have been used to understand the molecular process involved in transformation of normal oral

[https://link.springer.com/chapter/10.1007/978-981-10-7455-4\\_12](https://link.springer.com/chapter/10.1007/978-981-10-7455-4_12)

### Potent Antitumor Effects of a Combination of Three Nutraceutical Compounds

Vikalp Vishwakarma<sup>1</sup>, Jacob New<sup>1,2</sup>, Dhruv Kumar<sup>1,6</sup>, Vusala Snyder<sup>1</sup>, Levi Arnold<sup>1</sup>, Emily Nissen<sup>1</sup>, Qingting Hu<sup>3</sup>, Nikki Cheng<sup>3</sup>, David Miller<sup>4</sup>, Ahia Rael Thomas<sup>1</sup>, Yelizaveta Shnyder<sup>1</sup>, Kiran Kakarala<sup>1</sup>, Terance Ted Tsue<sup>1</sup>, Douglas A. Girod<sup>1</sup> & Sufi Mary Thomas<sup>1,2,5</sup>

Head and neck squamous cell carcinoma (HNSCC) is associated with low survival, and the current aggressive therapies result in high morbidity. Nutraceuticals are dietary compounds with few side effects. However, limited antitumor efficacy has restricted their application for cancer therapy. Here, we examine combining nutraceuticals, establishing a combination therapy that is more potent than any singular component, and delineate the mechanism of action. Three formulations were tested: GZ17-S

<https://www.nature.com/articles/s41598-018-29683-1>

### Nanotechnology: a promising method for oral cancer detection and diagnosis

Xiao-Jie Chen<sup>1</sup>, Xue-Qiong Zhang<sup>2\*</sup>, Qi Liu<sup>3</sup>, Jing Zhang<sup>1,4</sup> and Gang Zhou<sup>1,4\*</sup>

#### Abstract

Oral cancer is a common and aggressive cancer with high morbidity, mortality, and recurrence rate. Early detection is of utmost importance for cancer prevention and disease management. Currently, tissue biopsy is the gold standard for oral cancer diagnosis, but it is invasive, which may cause patient discomfort. Traditional noninvasive methods such as vital staining, exfoliative cytology, and molecular imaging are being explored. Thus, there is an urgent need for exploring noninvasive, highly sensitive, and specific methods for oral cancer detection and diagnosis. In this study, we developed a novel nanotechnology-based method for oral cancer detection and diagnosis. The method involves the use of a nanoscale probe that can detect and diagnose oral cancer cells in a noninvasive manner. The probe is composed of a gold nanoparticle and a specific antibody that binds to a protein overexpressed in oral cancer cells. The probe is injected into the oral cavity, and the presence of oral cancer cells is detected by the probe's fluorescence signal. The method is highly sensitive and specific, and it can detect oral cancer cells at an early stage. This method has the potential to revolutionize oral cancer detection and diagnosis, and it may also be applicable to other types of cancer.

<https://jnanobiotechnology.biomedcentral.com/articles/10.1186/s12951-018-0378-6>



# Application of Stem Cells in Oral Disease Therapy: Progresses and Perspectives

Bo Yang<sup>1†</sup>, Yi Qiu<sup>1†</sup>, Niu Zhou<sup>1</sup>, Hong Ouyang<sup>2</sup>, Junjun Ding<sup>3</sup>, Bin Cheng<sup>1\*</sup> and Jianbo Sun<sup>1\*</sup>

<sup>1</sup> Guangdong Provincial Key Laboratory of Stomatology, Guanghua School of Stomatology, Sun Yat-Sen University, Guangzhou, China, <sup>2</sup> State Key Laboratory of Ophthalmology, Zhongshan Ophthalmic Center, Sun Yat-Sen University, Guangzhou, China, <sup>3</sup> Department of Spine Surgery, The Third Affiliated Hospital of Sun Yat-Sen University, Key Laboratory of Stem Cells and Tissue Engineering, Ministry of Education, Zhongshan School of Medicine, Sun Yat-Sen University, Guangzhou, China

Stem cells are undifferentiated and pluripotent cells that can differentiate

## Big data registries can lead to new glaucoma research opportunities

January 17, 2018

+ ADD TOPIC TO EMAIL ALERTS



Cynthia Mattox

WAILEA, Hawaii — The IRIS Registry, the largest clinical data registry in the world for any specialty, has great potential for furthering glaucoma research and treatment, according to a speaker here.

The American Academy of Ophthalmology's IRIS Registry enables clinicians to look at large patient populations, rare diseases, prevalence data and differences in practice patterns geographically or disparities in practice among certain patient populations, **Cynthia Mattox, MD, FACS**, said at Hawaiian Eye 2018.

### SEE ALSO

Half-dose PDT results

"Looking for outcomes, that's our ultimate goal, to advance our clinical care of patients. Looking

Themes of  
Previous  
Newsletter

## Six Quick Tips to Identifying High Quality Research

When you do your search look for:

1. Peer reviewed journals and other similarly refereed sources

Not all published studies have been reviewed by other experts. However, if a study is presented in a peer-reviewed source you at least know that someone else has made some sort of quality assessment. If the article is listed in a good database (e.g. Eric, Cochrane, EBM Reviews), it is very likely peer-reviewed.

2. Outcomes, interventions, and populations that are meaningful and useful to you and your clients

[http://www.columbia.edu/cu/musher/Website/Website/Module%207\\_Quality%20Quick%20Tips.doc](http://www.columbia.edu/cu/musher/Website/Website/Module%207_Quality%20Quick%20Tips.doc)

# BUZZ AROUND THE WORLD

THE TIMES OF INDIA

## 2.6 lakh people found to have symptoms of oral cancer in Maharashtra

PTI | Mar 23, 2018, 05:27 PM IST



MUMBAI: Over 2.6 lakh people in the state were found to have symptoms of oral cancer in a recent screening, the Maharashtra government told the Legislative Assembly on Friday.

In a written reply to a question, Health Minister Deepak Sawant said that 2.14 crore people in the state were screened for oral cancer in December 2017.

"Of this, 2,62,431 people were found to have symptoms of oral cancer," the minister said.

These persons would get further treatment, if necessary, at government hospitals or under government schemes after they undergo biopsy (to confirm if they have cancer), he said.

The state government is taking several initiatives to spread awareness about the hazards of tobacco consumption, the reply said.

23<sup>rd</sup> March 2018, Times of India

THE TIMES OF INDIA

## Air pollution linked to high risk of oral cancer: Study

IANS | Oct 11, 2018, 05:13 PM IST



Higher levels of air pollution may be linked to a heightened risk of developing oral cancer, which includes cancers of the lips, tongue, cheeks, floor of the mouth, hard and soft palate, a study has found. While mouth cancers have been associated with smoking, drinking, human papilloma virus, and the chewing of betel quid ("paan"), the study added to this list increased levels of fine particulate matter (PM2.5) and to lesser extent, ozone.

"This study, with a large sample size, is the first to associate oral cancer with PM2.5... These findings add to the growing evidence on the adverse effects of PM2.5 on human health," said researchers including Shou-Jen Lan, Professor at the Asia University, in Taiwan.

11<sup>th</sup> October 2018, Times of India

Exposure to heavy metals and emissions from petrochemical plants are also thought to be implicated in the development of the disease while PM2.5 is known to be harmful to respiratory and cardiovascular health.

THE TIMES OF INDIA

## High protein supplements can alleviate cancer: Study

TNN | Jul 27, 2018, 07:11 AM IST



HYDERABAD: Nutritional supplements will help improve the quality of life in patients suffering from head and neck cancer. A research study conducted by city cancer experts has revealed that cancer patients, who are put on high protein diet, showed improvement in health and quality of life.

As part of the study, about 400 patients suffering from head and neck cancer were supplied with food containing high content of protein for a period of eight months. After eight months, the condition of the patients was evaluated, and the result was quite surprising – improved health and quality of life. The nutrition programme was taken up by the citybased MNJ Cancer Hospital in collaboration with a nongovernmental

organisation, Helping Hand Foundation (HHF). According to doctors, the incidence of cancers like head and neck is quite high in Hyderabad. These cancers include those of oral cavity, buccal mucosa, tongue and voice box.

27<sup>th</sup> July 2018, Times of India

## FROM THE VIEW POINT OF OUR FACULTY

### PERSONAL DETAILS

|                |                               |
|----------------|-------------------------------|
| Name           | Dr Navin Shah                 |
| Qualifications | M D S                         |
| Designation    | Prof & Head                   |
| Institute      | Dept. of Oral Surgery, KMSDCH |
| Contact no.    | 9825021681                    |
| Email Id       | drnavin33@yahoo.com           |



**1. What is your research proficiency that energizes you to pursue? How you are exploring those research areas through projects and publications?**

**Reply:** Horizons of Maxillo-facial surgery is expanding very quickly. New surgical techniques, modifications in existing procedures, innovations in armamentarium, development of guided surgery, vast clinical exposure, delivering guest lectures at national forum gives opportunity to share new ideas and through literature keeps me updated to pursue research areas. Research projects with innovative ideas are assigned to post graduates. One patent on 'Modification in plating system' has been registered. MOU with 'Advanced training in Cleft & Cranio Facial Surgery Center' has been established for Faculty & PG student for skill enhancement. Inviting various national & international faculties for live surgical workshop & hands on courses at our place helps in upgradation & enhancement of surgical skill & knowledge.

**2. The theme of this newsletter i.e. 'Oral Cancer and Clinical Research' is very much familiar to your clinical expertise. Share your views on exploring oral cancer and related manifestations as a research thrust area of Sumandeep Vidyapeeth.**

**Reply:** With consideration of our requirement and expertise, I think Sumandeep Vidyapeeth Research Thrust areas in dental sciences should be-

- (I) Intense awareness & preventive educational program to initiate in vulnerable teenage group
- (II) Early detection at Pre Malignant stage & prompt treatment to arrest its further progress
- (III) In established oral cancer cases, immediate surgical resection & reconstruction of local anatomy to improve post surgery quality of life & minimize incidences of recurrence

Based on above major thrust areas extensive research program can be planned.

**3. Suggest any research program to strengthen research on a large perspective in Dental Sciences.**

**Reply: I.** There are many incidence of parasymphysis fracture in the mental nerve area. Chances of nerve entrapment in fracture line is more which can result into nerve injury and parathesia. Reduction of fracture line and stabilization of fracture fragments by using 3D mini plates in this area to counteract torsional forces by following ChampyOsteosynthesis principle becomes difficult because presence of mental nerve in the area. I have patented one 3D plate design for preserving the mental nerve and plating at parasymphysis fracture line becomes easy and risk free. There is a good scope of high impact research for this hypothesis which can attract external research funding also.

**II.** As mentioned above Multi disciplinary approach & collective efforts from all department, all research thrust areas can be addressed in Dental science of Sumandeep Vidyapeeth.

4. In your views, in which manner our faculty and UG/PG students can participate in development of high impact research proposal in any of interested and potential area of healthcare research.

**Reply:** Innovative ideas & self-motivation of Faculty with industrial collaboration can bring about high impact research. Second, UG and PG students can be motivated for more ICMR research projects.

5. You have huge academic and clinical experience in our university. What are the real obstacles, need to overcome to foster research outcome (including high impact projects and publications and external funding) in the university? Share your suggestions.

**Reply:** Although each faculty/researcher is doing his/her best but for high impact research and publications, one should also develop the understanding of high impact research and work-out for that (Reading more scientific journals). To institute such mindset, faculty should read and spend more time on reading quality research articles and interact/participate in scientific and research oriented conferences. It will bring new ideas from interdisciplinary areas of research. Another aspect which needs to improvise is infrastructure for high impact research. University should also support financially to our faculty and PG students to attend high value research conferences and workshops. We should design high impact interdisciplinary projects to be supported by external funding agency as well as from our institute to fulfill the infra-gap. We should also develop a better record system of clinical cases to develop registry for retrospective study or cohort data base.

UPCOMING EVENTS



Conference series LLC Ltd presents...

International Conference on  
**Dental Research & Dental Treatments**  
Feb 22-23, 2019 Dallas, USA  
Theme: Endurance and Excellence in Dental Research and Treatments

<https://dentalresearch.conferenceseries.com/>  [dentalhealth@annualamericacongress.com](mailto:dentalhealth@annualamericacongress.com)



*23rd Annual World Dental Summit*  
*March 11-13, 2019 Stockholm, Sweden*

*Theme: Reviewing excellence in dental world*

## SEMINAR/CONFERENCE AND AWARD UPDATES

Department of Oral Medicine and Maxillofacial Radiology, K. M. Shah Dental College and Hospital, Sumandeep Vidyapeeth Deemed to be University, had organized an **International Summit on “Oral Submucous Fibrosis: Know More No Less!!!”** with the Theme: *Excellence in Medical Biotechnology, Translational Research and Therapeutic Intervention in Oral Submucous Fibrosis*, from 6<sup>th</sup> - 8<sup>th</sup> October 2018.

The Guest / Resource Faculty were invited from different parts from India, USA (Harvard University), Australia (Griffith University), Nepal, Bangladesh, Sri Lanka, Hong Kong and Saudi Arabia. There were 10 International and 22 National Speakers, who shared their wisdom and knowledge on Oral Submucous Fibrosis. There were total 11 sessions, covering all the aspects of Oral Submucous Fibrosis (OSMF), Research opportunities and Recent advances in Management, distributed for all the three days. More than 80 delegates presented the Scientific papers and e-posters during the Summit.



## ACHIEVEMENT OF OUR RESEARCHERS

**Dr. Anshula Deshpande, Professor, K. M. Shah Dental College and Hospital, Sumandeep Vidyapeeth Deemed to be University** won the **Best Paper Faculty Presentation award** at 40<sup>th</sup> National Conference at Indian society of Paedodontics and Preventive Dentistry, Nagpur, India. She was the presenting author of an Original Research titled *“Treat ECC to Beat Malnourishment”*. The research focused on one of the most prevalent disease in children worldwide, Early Childhood Caries, study was funded by Sumandeep Vidyapeeth Deemed to be University. The research title of the study was *“The effect of dental rehabilitation on Anthropometric measurements, Hemoglobin level and Salivary parameters amongst S-ECC Children: A longitudinal study.”*



**Mr. Harsh S. Dave**, MBBS student, **SBKSMI & RC, Sumandeep Vidyapeeth Deemed to be University** had participated in 2<sup>nd</sup> International Conference at Bali-Indonesia on *“Reaching the Unreached: A Challenge to Technological Development”* (Track: Medical Sciences including AYUSH and Pharmacy) held on 19-20<sup>th</sup> November, 2018 organized jointly by ISTE Gujarat Section and ISTE Madhya Pradesh Section. He presented two research papers and three posters and was awarded for the **Best Paper** on *“Evidence Based Education System (EBES): A case study from a student of Sumandeep Vidyapeeth”* and **Best Poster** for *“Effects of full moon on human health: A structural review of correlation between full moon and different aspects of human health”*. Other paper and posters presented by him are:

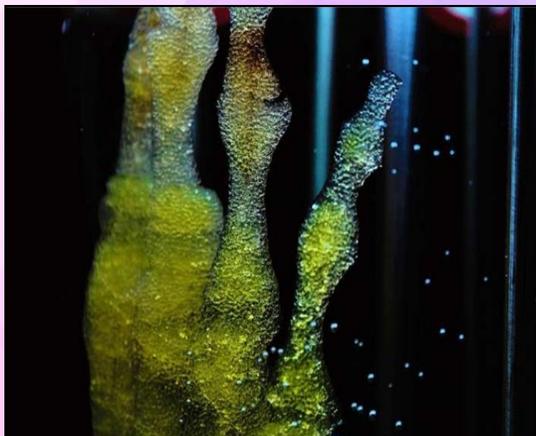
- Appropriate technologies which help to reach universal health care - A review of future needs of India
- India’s Heat Wave: Wrath on human being
- Impact of Computer Stress on Eye: A Comparative Study



## FOLLOW UP NEWS OF PREVIOUS RESEARCH THEME

### STEM CELLS

#### Cells using sugar for metabolic process may fight inflammation



New research by a team from the FAMU-FSU College of Engineering has discovered that a type of adult stem cell found in a variety of tissues can be manipulated to enhance tissue regeneration and potentially treat inflammatory diseases.

Teng Ma, chair of the FAMU-FSU Department of Chemical and Biomedical Engineering, and graduate student Xuegang Yuan published a new paper in the journal *Stem Cells Translational Medicine* that delves into the complicated science of cell therapy and examines how human mesenchymal stem cells can be used to combat inflammation.

The researchers found that these stem cells, which are found in muscle, bone and fat tissues, undergo a metabolic process that could ultimately be harnessed and directed as a medical treatment.

"The idea to use cells as 'living medicine' to cure disease has a long history," Ma said. "We are interested in how to produce the therapeutically competent cells from a limited donor source on a large scale and to determine whether cells from older donors are as potent as the ones from young donors. Understanding how cells use energy seems to be a key factor."

<https://medicalxpress.com/news/2018-11-cells-sugar-metabolic-inflammation.html>

### Antioxidants Prevent Cognitive Deficits in Diabetics

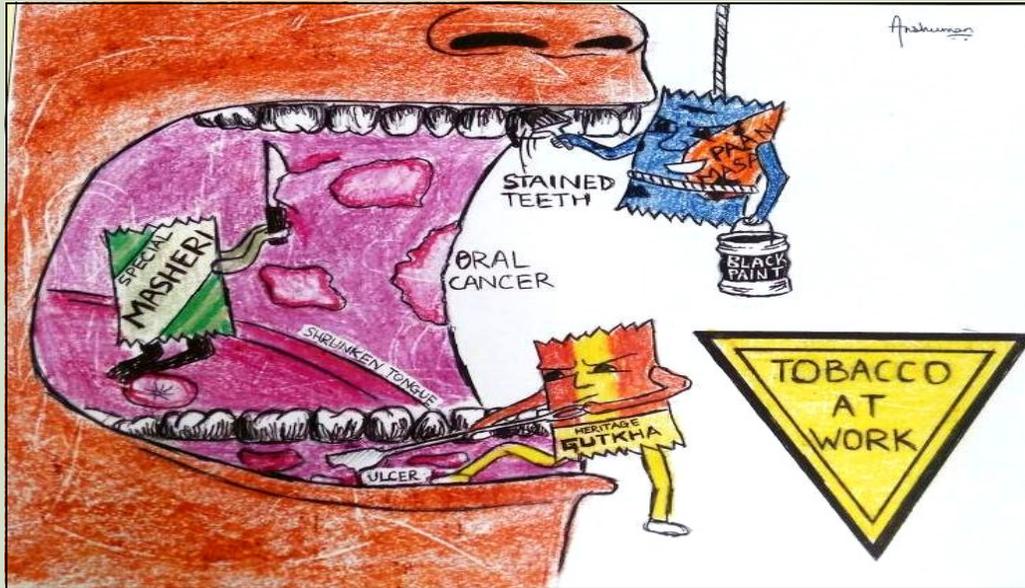
According to a study presented at the Society for Endocrinology annual conference in Glasgow, regular consumption of antioxidants may help reduce cognitive difficulties in patients suffering from diabetes. Long-term decline in cognitive function is a common consequence for patients who frequently experience low blood sugar levels when using insulin to manage their diabetes.



For the study, the team of researchers used insulin to induce repeated bouts of low blood sugar in a mouse model of type-1 diabetes. One group of mice were also dosed with vegetable-derived antioxidant sulforaphane (SFN).

Findings in the study demonstrated that mice treated with SFN showed increased expression of antioxidant markers and decreased free radical cell damage. In addition, SFN significantly improved cognitive ability in memory tasks. The concentration of SFN would not be attainable in a normal diet rich in vegetables, as per the researchers.

<https://www.ndtv.com/food/antioxidants-prevent-cognitive-deficits-in-diabetics-antioxidant-rich-foods-you-must-eat-1951644>



For your suggestions mail us on:  
[chief.researchofficer@sumandeepeethdu.edu.in](mailto:chief.researchofficer@sumandeepeethdu.edu.in)