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Charutar Vidya Mandal's  
**NATUBHAI V. PATEL COLLEGE OF PURE AND APPLIED SCIENCES**



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**From the Chief Editor's Desk**

**By Dr. Basudeb Bakshi**



I am really proud and excited to accolade that we are ready with another issue of SPECTRUM The measure of Progress, which will definitely unfold the precious and joyous moments of the college. This issue is certainly an industrious album of success stories of the year round efforts made by students and faculties. I consider that our success depends upon our power to perceive, the power to observe and the power to explore. Helen Keller rightly says that the world is moved along not only by the mighty shoves of its heroes, but also by the aggregate of the tiny pushes of each honest worker. This phenomenal task of editing college e-magazine would not have been possible without the sincere support of the members of the Editorial Board. I am thankful to all my colleagues who dipped their oars into the turbulent water of the magazine and have sailed it to the shore of publication. I strongly believe that this issue of Spectrum will set a tradition to witness the manifestation of the incessant progress of our budding brains. The Editorial Board is grateful to Dr C L Patel, Chairman, Charutar Vidya Mandal (CVM) for his keen interest and support.  
*Wishing you all a very Happy Holi and Good Luck.*



**NVPASAA**  
**NVPAS Alumni**  
**Association**

**By Shreya Bhavsar**

**NVPASAA-NVPAS**  
**Alumni Association**  
<http://www.nvpasaa.co.in> The alumni association of the college was formally founded by Dr. B.R. Patel (Ex-Principal) on 14/12/2003. The association is constituted of President [Principal], Vice-President, Secretary, [Student Co-opted member], Co-opted faculty members of NVPAS, Co-opted Ex-student members from each

department and a Treasurer. More than 1000 students are registered online through the Alumni website. More than 3000 students are connected through other social networking sites.

**AIMS AND OBJECTIVES:**

- ☞ To enhance a sense of devotion and love for the Alma Ma'ter.
- ☞ To act as a bridge between the past and present students of the college.
- ☞ To prepare and maintain an updated register of its members and their attainments.
- ☞ To render all possible advisory help to its members in scientific matters.
- ☞ To render all possible help in seeking the employment of its

members.

☞ To help maintain a high academic standards in our college by giving information regarding the latest developments and requirements in various fields.

☞ To extend financial assistance to deserving present students for educational purposes.

☞ To create a sense of comradeship and brotherhood among its members.

**Various activities** like Alumni Talks, yearly Meeting, Felicitation to Alumni Achievers, Career Quantum, Farewell to Final year students are held regularly.

**GOLD MEDALS SECURED BY OUR STUDENTS AT S. P. UNIVERSITY T. Y. B. Sc. EXAMINATION APRIL 2016.**

Sr. No.	Name	Subject	Name of Gold Medal
01	Mr. Yuvrajsinh Jabbarsinh Chauhan	Industrial Chemistry	Dipee Chemicals Private Limited (Ankleshwar) Gold Plated Medal
02	Mr. Summer Pankaj	Environmental Science	Charutar Vidya Mandal Gold Plated Medal
03	Mr. Dixant Rajendrakumar Thakor	Information Technology	Charutar Vidya Mandal Gold Plated Medal
04	Ms. Nishithaben Patel	Genetics	Dr. B. R. Patel Gold Medal
05	Mr. Yuvrajsinh Jabbarsinh Chauhan	Industrial Chemistry	Dr. D. A. Raval Gold Medal



**MINAXI LALIT STATE LEVEL EXAM—2016-17**



Sr. No.	Name	Subject	Position
01	Ms. Shreya Rakholiya	Environmental Science	First
02	Mr. Jignesh Solanki	Environmental Science	Second
03	Ms. Dweepa Parmar	Zoology	Second



**Vibrant Gujarat Global Summit 2017**



Two Faculty members Dr. Amit Ballani and Dr. Sushmita Sahoo and 18 students were selected to attend the inauguration of Nobel Prize exhibition by Prime Minister Narendra Modi in the presence of nine Nobel laureates at Science city Ahmedabad on 9th January 2017 and for NOBEL DIALOGUE 2017 on 10th January 2017 at Mahatma Mandir to attend the interaction with Nobel prize Laureates as a part of Vibrant Gujarat Global Summit 2017.





# Madhyastha Samiti 2016-2017

President - Dr. Basudeb Bakshi

Vice-President - Mr. Kartik Jagtap

General Secretary - Ms. Shiksha Sharma

Madhyastha Samiti organized the Pre-Youth Festival in the August 2016. One Hundred and Eighty Four students participated in various competitions such as Light Vocal Solo, Group Song Indian and Western, Debate, Elocution, Quiz, Painting, Poster Making, Rangoli, Collage, Clay Modelling, Installation, etc. Renowned artists and scholars Dr. Ajitbhai Patel, Ms. Inaben Shah, Mr. Jigar Mistry, Dr. Charuddatta Gurjar and Dr. Monika Shah served as judges for various competitions. Ms. Shruti Maithani (SYMI) won the second prize in Elocution Competition. Ms. Shiksha Sharma (TYMI) and Ms. Kanishka Thakur (TYES) won the Third Prize in Debate Competition at during the Inter-Collegiate Youth Festival organized by S. P. University.

## FACULTY OF MUSIC, DANCE & THEATRE



As a part of the Janmashtami-Independence Day Celebration the portfolio organized a cultural event called SAMARTHYA. The event involved participation of nearly 150 students into various activities like folk dance, solo singing and dancing events, classical dance, Matkifod etc. As a part of Teachers' Day Celebration, the portfolio organized a programme entitled GURUKRUPA wherein students decorated their respective classes. The students of well-decorated classes were given prizes. Also, students performed dance and songs. As a part of Navaratri celebration, the portfolio organized a special event called RANZANAT. The Talent Eve was organized with the title SILSILA.

## EXTENSION ACTIVITY

Fifty blankets were distributed among the needy in the Railway station and Old Bus Stand area of Anand on the night of 26-01-17.

During the last session of Gyandhara educational kits were given to 60 kids and clothes were distributed among the needy by the Extension Cell. Shri Mahendrabhai Patel- President of Vidyanagar Palika, Mr. Jitendrbhai Patel- Vice-President of Vidyanagar Palika, Principal of the college and some faculty members were present on this occasion.

The NSS Unit organized 'Tree Plantation Programme' on 30.07.2016 at Arunoday Society V. V. Nagar wherein students of first year enthusiastically participated.



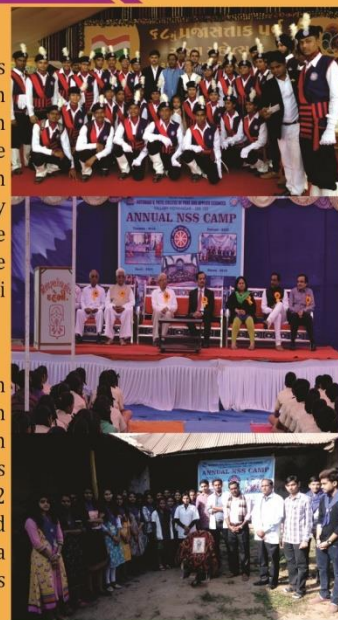
## NATIONAL SERVICE SCHEME (NSS)

### NSS REGULAR ACTIVITIES

Eight volunteers participated in the National Integration Camp sponsored by Ministry of Youth Affairs and Sports, Govt. of India at Agra and organized by NSS Regional Directorate, Lucknow, Uttar Pradesh from 13-06-16 to 20-06-16. The unit organized One-Day Camp on 07-09-16 at college wherein cleaning of the college premises was done by three hundred students. Seventy volunteers attended the One Day Seminar on 'Digital Banking and Cashless Payment' and 'Vittiy Saksharta Abhiyan' at the Town Hall, Anand on 25-12-16. Four NSS volunteers of our college participated in the State Republic Day Parade. Dr. Yogesh Patel- the NSS P.O. was appointed as the Liaison Officer of the NSS platoon by the Govt. of Gujarat. Hon. Governor Shri O. P. Kohli invited the NSS Platoon which participated on the State Republic Day parade to Rajbhavan on 13-02-17. Hon. Central Minister of Education Shri Bhupendrasinh Chudasama also had a meeting with the NSS team.

### ANNUAL NSS CAMP

The NSS Unit organized ANNUAL NSS CAMP at Dahemi village (Ta: Borsad and Dist: Anand) from 01.01.17 to 07.01.17. Total 175 students participated in this camp. Rally was organized with slogans on the subject 'Addiction Eradication'. A Free Medical Check-up Camp was organized wherein more than one hundred and fourteen patients were examined and medicines were given free of cost. Doctors from Sankra Eye Hospital, Mogar checked 101 patients suffering from symptoms of cataract. At last 32 patients were willing to get admitted for operation of cataract. Volunteers performed street play based on various themes namely 'Female Foeticide', 'Girl Education', 'Addiction Eradication' and 'Swachhta Abhiyan'. The volunteers personally visited various areas of the village and guided them about various ways cashless payment.



## NATIONAL CADET CORPS (NCC)

One of the students of our college, SUO Amit Bhatt was selected in Youth Exchange Programme to Singapore from 17 to 26 Nov -2016. YEP Programme - Participated in the international cadet exchange programme along with the cadets of UK, USA and Singapore. Various cadets attended other camps like Common annual training camp organized at Thamna, Basic leadership camp organized at thamna, National Integration Camp at Disha and Rajpipla.



## ANTI - TOBACCO CELL

Anti-Tobacco Cell, in association with NSS Unit, organized One-Day Seminar for the Fourth Grade employees of CVM on the topic 'Vyasan Mukti Ane Vyaktitva Vikas' on 23-10-16 and 18-12-16. Prof. S. G. Patel – Hon., Secretary CVM was invited as the chief guest. Dr. Shailesh Shah- renowned Cancer specialist of Anand, Dr. Priyanka Srivastava- from Zydus Hospital, Anand, Dr. Sushen Bhatt from Shri Krishna Hospital, Karamsad, Dr. Bhavesh Patel- Principal of VP and RPTP Science College, V. V. Nagar, Reverend Brahmakumari Jagrutiben and Dr. Kundan Mishra- Faculty of BT,GT,BNF from NVPAS College oriented the employees about adverse effects of various addictions on health and cause of cancer etc. At the end of the programme the employees admitted that they found the programme really efficacious. They also promised to make concerted efforts to give up their addictions.



## RED RIBBON CLUB

The NSS Unit, in association with District Legal Services Authority, Anand, organized a seminar on 24-08-16 wherein Ms. Susan Parmar from Kripa Foundation, Baroda delivered a lecture on the sufferings of HIV/AIDS affected people and social indifference they face. Mr. J. Z. Mehta- Legal Officer, District Legal Service Authority, Anand shared information on legal help available for the HIV/AIDS affected people. Hundred and Fifty volunteers participated in this seminar. The Unit in association with A. D. Gorwala Blood Bank, Karamsad organized Blood Donation Camp On 09-09-16 wherein 105 units of blood was collected. The Unit, in association with Indian Red Cross Society, Anand organized Blood Donation Camp in the college on 24-01-17 wherein 103 units of blood was collected.



## SPORTS 2017

The college has become the University Runners Up in the Chess (Girls) tournament.

The college has become the University Champion in the Weight Lifting (Boys) tournament and in the Best Physique (Boys) tournament.



## ENERGY CONSERVATION SEMINAR

The Department of Physical Sciences of NVPAS organized a one day National Seminar 'Met-Aware-2016' on 16th July 2016 in joint collaboration with the Indian Meteorological Society Ahmedabad Chapter with an aim to create awareness in science students about the Climate Change. The seminar was inaugurated by the Deputy Director, SAC, ISRO, Shri Rajiv Jyoti, he also delivered his keynote address and inspired the students. The inaugural session was followed by the first session in which students were made abreast of the present climate change scenario by the two keynote lectures delivered by Dr. Manorama Mohanty, Scientist, IMD and Dr. C. M. Kishtwal, Scientist, SAC, ISRO, Ahmedabad.



## WORKSHOP ON SOPHISTICATED INSTRUMENTAL METHOD OF ANALYSIS IN CHEMICAL SCIENCES

A state level workshop on "Sophisticated Instrumental Method of Analysis in Chemical Sciences" was jointly organized by department of chemical Sciences with the sister institution ISTAR on 16th Feb 2017. 150 students benefitted from the workshop.



## IC-FEST 2017

"IC-Fest 2017" an interclass oral and poster presentation competition was arranged by the department on 10th Feb 2017 in which Dr. Vishal Makadia (R&D Manager of RoyalCastor Products Limited) was invited to deliver a talk on "Bio Degradable Polymers"

Industrial Chemistry Department has arranged industrial visit to Alembic Pharma, Vimal Microns Ltd and Royal Castor Ltd, Mehsana in the current academic year.

## GENEQUEST-2017



Genequest-2017-State Level Intercollegiate competition on 7th Jan, 2017 and Skill development programme jointly organized by BT, GT & BNF and Microbiology departments. Coordinator of the programme was Dr. Madhumati Bora and organizing secretary was Dr. Akshaya Gupte.

## N-BT-CBC (BIOTECHNOLOGY CAPACITY BUILDING CELL)



Six-days crash workshop from 14th February to 20th February, 2017 organized by BT, GT & BNF department under N-BT-CBC Coordinated by Dr. Amit Ballani & Dr. Kundan K Mishra sponsored by GSBTM for TYBSc and SYBSc students separately.





## TECHNOASTRUM 2016-17 - STATE LEVEL IT COMPETITIONS

Computer Science Department organized one day State Level IT Competitions "TechnoAstrum 2016-17" on 10th January 2017. The Patron of the event was Dr. C. L. Patel, Chairman, CVM, and Dr. S. G. Patel, Secretary, CVM. The Chief Guest of the event was Dr. Amit Ganatra, Dean & Professor, Faculty of Technology and Engineering, CHARUSAT. Dr. Basudeb Bakshi, Principal of Natubhai V. Patel College was the Convener of the event. Ms. Shreya Bhavsar, HOD, Computer Science Department was the Coordinator and Mr. Hasamukh Patel was the Organizing Secretary of the event.



## ENVIRONMENTAL SCIENCE DEPARTMENT



Visits to Tissue Culture Lab, Santokpura and Fish induction centre at fish culture farm, Lingada was organized for T Y B Sc students of Environmental Science.

World Wetland Day was celebrated on 2nd February 2017 at Pariej wetland by GEER foundation and Forest Department by Environmental Science students with Dr. Rita N Kumar and Ms. Rashmi Thakkar.



### PRIONS - INFECTIOUS PROTEIN!

By Ms Rozmeena Patel  
(T. Y. B. Sc. Biotechnology)

Prions are proteinaceous particles without nucleic acids. Prion is neither bacterial nor fungal and contains no genetic material. They are found on plasma membrane of many mammalian cells especially brain cells. Prions are not considered living organisms because they are misfolded protein molecules which may propagate by transmitting a misfolded protein state. If a prion enters a healthy organism, it acts as a template to guide the misfolding of more proteins into prion form. All known prions induce the formation of an amyloid plaques, in which the protein polymerizes into an aggregate consisting of tightly packed beta sheets. Amyloid aggregates are fibrils, growing at their ends, and replicate when breakage causes two growing ends to become four growing ends. Prion aggregates are extremely stable and accumulate in infected tissue, causing tissue damage and cell death. This structural stability means that prions are resistant to denaturation by chemical and physical agents, making disposal and containment of these particles difficult.

#### CHARACTERISTICS OF PRIONS

Prions are resistant to inactivation by heating to 900C, which can inactivate viruses. Prion infection is not sensitive to radiation treatment that damages virus genomes. Prions are not destroyed by enzymes by enzymes that digest DNA or

RNA. Prions are sensitive to protein denaturing agents, such as phenol and urea. Prions have direct pairing of amino acids.

#### HOW PRION DISEASES ARE CAUSED?

Prions can enter the brain through infection or can arise from mutation in gene that encodes the protein. Human can be infected by prions in two ways: 1. Acquiring the infection through an infecting agent. 2. Hereditary transmission

#### PRION DISEASES

**Creutzfeldt - Jakob Disease (CJD):-** Creutzfeldt-Jakob disease is caused by prions build up in cells of the brain slowly shrinks and the tissue fills with holes until it resembles a sponge. Those affected lose the ability to think and move properly and suffer from memory loss. It is always fatal, usually within one year of onset of illness.

**Mad Cow Disease:-** It is an illness also known as bovine spongiform encephalopathy (BSE). It is called mad cow disease because it affects a cow's nervous system, causing a cow to act strangely and lose control of its ability to do normal things. It is a rare illness people get from eating infected beef.

**Kuru:-** Kuru which occurred mainly in new guinea is transmitted through small breaks in the skin. Onset of symptoms begins with headaches, minor loss of coordination, and a tendency to giggle at inappropriate times. 3 months later, victim needed crutches to walk or stand; a month after that, victims could not move except for spasms. Within 1 year the patient dies.

**Scrapie of Sheep:-** Scrapie is a fatal, degenerative disease that affects the nervous system of a sheep and goat. It is one of several transmissible spongiform encephalopathies. It does not appear to be transmissible to humans.

**Gertsman-Straussler Scheinker:-** It is an extremely rare, neurodegenerative brain disorder. Patients may experience varying levels of ataxia (lack of muscle coordination) that becomes more pronounced and most patients develop dementia. Other symptoms may include dysarthria (slurring of speech), nystagmus (involuntary movements of the eyes), spasticity (rigid muscle tone), and visual disturbances, sometimes leading to blindness. GSS belongs to a family of human and animal diseases known as the transmissible spongiform encephalopathies (TSEs).

**Fatal Familial Insomnia:-** FFI is the abbreviation for an extremely rare genetic disease called fatal familial insomnia. It is an inherited prion disease that affects the brain and other parts of the nervous system. FFI usually leads to death within few months to a few years.

"All such diseases are referred to collectively as transmissible spongiform encephalopathies because in damaging neurons, they give brain tissue a spongy appearance"

#### DIAGNOSIS—There are various techniques by which prions can be diagnosed like:

1. Computed Tomography (CT) Scan :-
2. Magnetic Resonance Imaging (MRI)
3. Cerebrospinal Fluid (CSF) Exam
4. Tonsil Biopsy
5. Brain Biopsy
6. Autopsy

The only way to diagnose CJD with absolute certainty is by neuropathological examination either by brain biopsy or at autopsy

### Can malaria, dengue, chikungunya etc. really be wiped from the face of earth?

By Karan K. Thakar

(T. Y. B. Sc. Biotechnology)



This is the question we, the people of Science, ask ourselves each day. According to the NVBDCP (National Vector Borne Disease Control Programme), about 1.6 million cases of malaria are reported annually in India. Worldwide the figure reaches up to 3.2 billion, which is nearly 50% population of the world. In 2015, nearly half a million people died due to malaria. So what's the cure?

"The ultimate cure is prevention". Scientists have developed a novel approach, using the recent gene editing tool, called as CRISPR/Cas9 technique, which has enlightened new hope for eradicating malaria completely.

#### What is "CRISPR/Cas9"?

CRISPR-Cas9 is a unique technique that enables geneticists and medical researchers to edit parts of the genome by cutting out, replacing or adding parts to the DNA sequence.

#### What's the "Novel Approach"?

The answer is "GENE DRIVE".

- Gene drive is the practice of "stimulating biased inheritance of particular genes to alter entire populations." (It can only be performed in sexually reproducing organisms and thus cannot be used to engineer either bacteria or viruses)

- In sexually-reproducing organisms, most genes are present in two copies (which can be different alleles), each of which has 50% chance of being inherited. For a particular allele to spread through a large population, it must increase the fitness of each individual. However, some alleles have evolved molecular mechanisms that confer them greater transmission chance than the normal 50%. This allows them to spread through a population even if they reduce the fitness of each individual organism. Similarly by biasing the inheritance of particular altered genes, synthetic gene drives might be used to spread alterations through wild populations to achieve desired Genetically Modified Organism.

#### The step-by-step Explanation of the Procedure:

- With the help of Genetic engineering technologies (eg. CRISPR-Cas9), a transgenic male anopheles mosquito, carrying anti-pathogen effector genes in germ-line chromosome, was created which would target human malaria parasites.

- Now as we know the Anti-pathogen genes can only be inserted on one of homologous germ-line chromosomes i.e. heterozygous transgenic was formed, which upon mating could transfer the Anti-pathogen effector gene in 50% of progeny only, while the rest would be the same wild type.

- So in order to get homozygous transgenic males exhibiting a high frequency of germ-line gene conversion, whole CRISPR-Cas9 gene segment was transferred which possessed Dual set of anti-pathogen effector genes, a marker gene, and the autonomous gene-drive components.

- Mutant alleles result presumably from non-homologous end-joining events resulted in formation of 99.9% of progeny containing the anti-pathogen effector genes.

**The Good Thing:** About 1000 people die in a day worldwide because of malaria, so if we look at the approach then: Theoretically based on the Experimental observations, If only 1% of total population of malarial vector i.e. Anopheles Mosquito are inoculated with anti-pathogen CRISPR-based gene drive then within a year the entire (100%) population of Anopheles would carry those genes and the world would turn Malaria Free!!!

• The same technique can be used for diseases like Dengue, Yellow fever etc.

• It can be used to "genetically make an entirely new organism from a pre-existing organism."

#### The thing to worry about:

✧ Gene drives pass-on at a rapid speed among generations.

✧ The gene drives can spread among related species, so this may affect the ecosystem if a harmful gene drive is accidentally released in the ecosystem.

✧ It has many Global and Ethical Issues to be taken care of.