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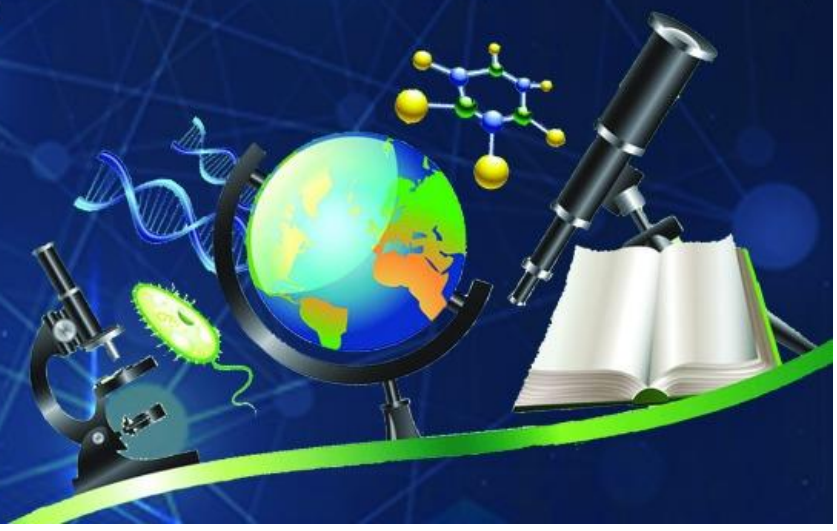

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I, Shri Dr. S. P. Jagadale hereby declared that the particulars given above are true to the best of my knowledge and belief.

Sign /-
(Dr. S.P. Jagadale, Principal)
(The editor and publisher may not agree with the views expressed in articles.)

"Chemistry for Better Health"

Chemistry plays an essential role in the field of medicine. Most of the drugs used for treatment or prevention of disease are made of some chemical. Hence, studying chemistry and knowing it is vital for healthcare professionals like doctors, nurses, and pharmacists. Besides drug substances, chemistry is also important in other aspects of medical systems like sterilization, sanitation, diagnosis, disease course, etc. Thus chemistry helps to give proper medical support to the patients without any errors. Let us see the role of chemistry in the medical field in few points.

In knowing the actual composition of drug:

When you see a label on the package of tablets or other medicines, you will notice a few ingredients besides the active drug constituent. Knowledge of chemistry helps the medical personnel to know what the role of that composition is and how the drug should be given or how it acts. If you notice the drug label in the image on the right, you will find the drug name "ibuprofen" a pain killer drug with its quantity mentioned as 200mg. Also, it mentions "coated tablets" This means the tablets have specialized coating so as to release medicine only in the intestine. Normal tablets will dissolve in the stomach but not these. So the physician can understand the drug in the packet, its quantity, its coating material, etc. He can decide if it can be given to children, old age people or to just adults.

Understanding the chemical nature of the drug:

Medicines we use have many chemical properties. They can be acidic, alkaline, oil-soluble, water-soluble, polarity, etc. chemistry in medicine- drug label. In the above picture, the drug belongs to the class of NSAID's which means it is non-polar and also acidic in nature. Knowledge of chemistry will help the doctor to guess how the drug is going to act. For example, an acidic drug will be better absorbed in the stomach while the alkaline drugs are well absorbed in the intestine. Also, a lipophilic drug has faster distribution into the brain and deeper tissues than a hydrophilic one. So a doctor can have an idea of how the drug is going to work in the body based on its chemical nature. In case there is excess dosing and toxicity, he can remove the acid part of the drug in the body.

In predicting the drug interactions:

Most of the time multiple drugs are given to a person as part of treatment. Knowledge of the chemistry of the medicine would help the pharmacist to predict if it can lead to any drug interactions. For example, in the case of a gastric ulcer, a doctor may prescribe an antacid like calcium hydroxide and also an antibiotic like tetracycline. In this case, tetracycline will form a chemical complex with calcium and does allow it to be absorbed into the blood. Thus there would be no effect of the said antibiotic in the body if taken.

In sterilization and sanitation:

Many chemicals like alcohol, phenol, acids, and aldehydes are used for sterilization and disinfection. Knowledge of chemistry helps to know how the substance possibly kills the microbes. Hence the person can decide which type of sterilization agent can be used for different purposes. See more on the uses of alcohol.

In the diagnosis of disease:

The absorption, distribution, and excretion of the drug can be controlled by altering the chemistry of the body. For example, if a person has taken a high dose of salicylates or other acidic medicines, it leads to poisoning. Their excretion can be enhanced by making the blood alkaline by administering sodium bicarbonate an alkaline substance. Also, not all medications can move into the brain due to their water solubility. Drugs like general anaesthetics.

Decrease the toxic effect of the drug and enhance tolerability:

The drug structure is studied as a part of medicinal chemistry. In doing so, the main functional groups responsible for therapeutic effects and toxic properties are ascertained. By modifying those functional groups, the toxic effect of the drug can be minimized.

To discover more new drugs or improve the potency:

Penicillin was discovered by Alexander Fleming from a fungus. By studying the chemical structure of this penicillin molecule, more alternatives like amoxicillin, carboxyl penicillin were designed. Previously penicillin was used to cause allergic shock and death in many people. But, due to the modification, this issue was resolved. Also, these new derivatives are effective on gram-negative bacteria as well.

To study the mechanism of disease:

Most diseases can be explained by some changes in body chemistry. For example, osteoporosis is due to a decrease in calcium levels in the body. Furthermore, enhanced hydrochloric acid secretion leads to gastric acidity. A decrease in iron levels leads to anaemia. Thus, the basic mechanism of disease can be decided in chemistry terms to treat it.

To know how the drug acts:

Drugs act by a specific mechanism to bring about a cure. This mechanism can be studied and also explained well by chemistry. For example, in the case of depression, there is a disturbance in the levels of neurotransmitters in the brain. Especially, those like serotonin, norepinephrine, and dopamine are altered. Drugs used for the cure act by increasing these neurotransmitters.

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Article By

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"Factors Affecting Consumer Behaviour"

Consumer behaviour is the study of human decision-making, preferences. It is the study of how people make purchase decisions to satisfy their needs and wants. This is often referred to as consumer psychology, but the two fields are different. Consumer behaviour relates to actual buying decision consumer make whereas the psychology of consumers is concerned with the study of the human mind & Behaviour.

Consumer Behaviour entails "all activities associated with the purchase, use and disposal of goods and services, including the consumer's emotional, mental and Behavioural responses that precede or follow these activities."(Kardes, F., Cronley, M. and Cline, T., Consumer Behaviour, Mason, OH, South-Western Cengage, 2011 p.7)

Consumer behaviour aims to recognize, how consumers make buying decisions and analyze their likes, dislikes, preferences. Consumer behaviour is a significant part of marketing, it provides marketers with the knowledge needed to design effective marketing campaigns that meet the needs of specific consumers. It also allows marketers to create products and services that meet the needs of consumers better than competitors' offerings.

Consumer behaviour is heterogeneous and unpredictable. It is different from person to person. Consumer behaviour significantly affects buying decisions. Let's discuss, which factors affect behaviour?

1. Marketing/advertising:

The way consumers make decisions is influenced by a variety of factors, including the marketing campaign that was used to promote the product or service. The success of a marketing campaign can be measured by the number of consumers that are influenced by the message and the actions that they take as a result. Marketing is all about trying to influence a person's behaviour in the desired direction.

2. Habitual Buying:

Sometimes consumer buys product and services from their past experiences. It means they make a repeat purchase. Habits are formed through repeated behaviours and can become internalized such that the behaviour is felt rather than thought. Habitual buying behaviour is the result of repeated decisions to purchase a particular product or service, even when other choices are available.

3. Economic phase/ condition:

The economic condition in which companies market their products and services, and the impact this has on consumers. It also includes how governments regulate consumer

behaviour, such as food and beverage labelling and marketing restrictions. economic conditions are not stagnant, they are changing.

4. Personal Choice/preference:

It includes their likes, dislikes, fashion, trends, morals, values, priorities, etc. It depends upon a person, their choices, and preferences. Each individual has their own choices & preferences.

5. Group impact/ influence:

Group impact or pressure in the form of social influence because people act or think in a certain way. It can have an impact on how we behave and what we buy. It is also influenced by social norms and group pressure.

6. Purchasing Power:

One of the most important factors that influence our behaviour is the amount of money we have available to spend on a purchase. It means our spending capacity. If we have a small budget, we will probably choose a cheaper brand (reasonable price brand) rather than a luxurious brand.

Article By

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Linus Torvalds

Developer of Linux Kernel

Linus Benedict Torvalds is a Finnish-American software engineer who is the creator and, historically, the main developer of the Linux kernel, used by Linux distributions and other operating systems such as Android. Time magazine has recognized Torvalds in 2000 as 17th in their Time 100: The Most Important People of the Century poll.On 20 April 2012, Torvalds was declared one of two winners of that year's Millennium Technology Prize, along with Shinya Yamanaka. The honour is widely described as technology's equivalent of the Nobel Prize. On 23 April 2014, the Institute of Electrical and Electronics Engineers named Torvalds as the 2014 recipient of the IEEE Computer Society's Computer Pioneer Award. The Computer Pioneer Award was established in 1981 by the IEEE Computer Society Board of Governors to recognize and honour the vision of those whose efforts resulted in the creation and continued vitality of the computer industry. The award is presented to outstanding individuals whose main contribution to the concepts and development of the computer field was made at least 15 years earlier. IEEE Masaru Ibuka Consumer Electronics Award is conferred by the Institute of Electrical and Electronics Engineers for outstanding contributions to consumer electronics technology has been named in honor the co-founder and honorary chairman of Sony Corporation, Masaru Ibuka. 2018 Ibuka award was conferred to Linus Torvalds "For his leadership of the development and proliferation of Linux." Linux kernel is a free and open-source, monolithic, modular, multitasking, and Unix-like operating system kernel. Kernel is central component of an operating system that manages operations of computer and hardware. It basically manages operations of memory and CPU time. It is core component of an operating system. Kernel acts as a bridge between applications and data processing performed at hardware level using inter-process communication and system calls.Torvalds was born in Helsinki, Finland, on 28 December 1969. He is the grandson of statistician Leo Törnqvist and of poet Ole Torvalds

and the great-grandson of journalist and soldier Toivo Karanko. His parents were campus radicals at the University of Helsinki in the 1960s. His family belongs to the Swedish-speaking minority in Finland. Torvalds was named after Linus Pauling, the Nobel Prize-winning American chemist.Torvalds attended the University of Helsinki between 1988 and 1996, graduating with a master's degree in computer science from the NODES research group. His academic career was interrupted after his first year of study when he joined the Finnish Navy Nyland Brigade in the summer of 1989, selecting the 11-month officer training program to fulfill the mandatory military service of Finland. He gained the rank of second lieutenant, with the role of an artillery observer. Torvalds bought computer science professor Andrew Tanenbaum's book Operating Systems: Design and Implementation, in which Tanenbaum describes MINIX, an educational stripped-down version of Unix. In 1990, he resumed his university studies, and was exposed to Unix for the first time, in the form of a DEC MicroVAX running ULTRIX. His MSc thesis was titled Linux: A Portable Operating System.His interest in computers began with a Commodore VIC-20(It is an 8-bit home computer that was sold by Commodore Business Machines) at the age of 11 in 1981, initially programming in BASIC, but later by directly accessing the 6502 CPU in machine code. He did not make use of assembly language. After the VIC-20 he purchased a Sinclair QL (personal computer by Sinclair Research in 1984), which he modified extensively, especially its operating system. "Because it was so hard to get software for it in Finland, Linus wrote his own assembler and editor (in addition to Pac-Man graphics libraries)" for the QL, as well as a few games. He wrote a Pac-Man clone named Cool Man. On 5 January 1991 he purchased an Intel 80386-based clone of IBM PC before receiving his MINIX copy, which in turn enabled him to begin work on Linux. The first prototypes of Linux were publicly released later in 1991. Version 1.0 was released on 14 March 1994. Torvalds first encountered the GNU Project in 1991, after another Swedish-speaking computer science student, Lars Wirzenius, took him to the University of Technology to listen to free software guru Richard Stallman's speech. Torvalds used Stallman's GNU General Public License version 2 (GPLv2) for his Linux kernel. Torvalds accepted a position at the company in California, where he would work from February 1997 until June 2003. He then moved to the Open Source Development Labs, which has since merged with the Free Standards Group to become the Linux Foundation, under whose auspices he continues to work. In 1999, Red Hat

and VA Linux, both leading developers of Linux-based software, presented Torvalds with stock options in gratitude for his creation. Currently, the Linux Foundation sponsors Torvalds so he can work full-time on improving Linux.

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"Bioluminescence in the Crustaceans"

Bioluminescence is a mechanism in which an organism produces light by a biochemical reaction. The light is produced as a result of a chemical reaction that is occur in the cells of bioluminescent organisms. This type of light production is not possible for all organisms as it demands synthesis of luciferin. Bioluminescence is the production and emission of light by a living organism. It is a form of chemiluminescence. Bioluminescence occurs widely in marine vertebrates and invertebrates, as well as in some fungi, microorganisms including some bioluminescent bacteria, and terrestrial arthropods such as fireflies.

Bioluminescence requires two chemicals namely **luciferin** and **luciferase** or photoprotein. They Luciferin is the compound that actually produces light. In a chemical reaction, the luciferin act as the substrate. The bioluminescent colour (yellow in fireflies, Antarctica krill-yellow green light) is a result of the arrangement of luciferin molecules. Luciferase is an enzyme which acts on the Luciferin and catalysing the light production. The interaction of the luciferase with oxidized (oxygen-added) luciferin creates a by-product, called **oxyluciferin**. Bioluminescence is seen in different groups of animals, but most commonly seen in arthropods.

Bioluminescence is found in many marine organisms: bacteria, algae, jellyfish, worms, crustaceans, sea stars, fish, and sharks. Bioluminescence is used by living things to hunt prey, defend against predators, find mates, and execute other vital activities. Some species luminesce to confuse attackers. Many species of squid, for instance, flash to startle predators, such as fish.

Bioluminescence in Ostracod (*Cypridina hilgendorfii*):

Ostracods are crustaceans belongs to phylum- Athropoda. They are known as seeds of shrimp or mussel. Ostracods are tiny crustacean. At night, they perform amazing light show. They release a cocktail of chemicals from tiny nozzles that reacts with oxygen in the sea water to produce light. They use this light to get protection from enemies and to communicate with each other. Males are produce blue light to attract female. The light signal pattern produced is different in different species.

Bioluminescence in Copepods :

Pleuromamma xiphias is a species of copepods belongs to family Metridinidae and their order is Calanoid. In most marine environments, copepods dominate the zooplankton community. Calanoid copepods dominate both the abundance and biomass of world-wide marine zooplankton

They produce blue-green light. The major function of copepod bioluminescence may be an anti-predatory response or a defensive behavior. Many of the copepod exhibit spike-like, strong light when their luciferase gets mixed with the substrate luciferin. This flash-type bioluminescence can act effectively as a repellent or distractor to predators.

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"Save Electricity, Save Environment"

Conserving electricity not only benefits the individual but also the community as a whole. By finding ways to reduce electricity use, you can lower your own electric bill, and if everyone does it, it reduces the total need for energy production, which directly affects the environmental release of fewer greenhouse gases, fewer oil spills and fewer strip mines, as well as cleaner air to breathe, cleaner water to drink and better food to eat.

Demand for electricity will be increasing from 20 to 50 percent over the next 25 years without concerted efforts to conserve, according to the United States Environmental Protection Agency. This puts stress on the current energy-producing systems, leading to increased instances of blackouts or brownouts during high-demand periods and forcing electric companies to search for more ways to produce electricity. It also drives up the cost for consumers. Most electricity generation over the globe takes place in thermal power plants, which burn

Either fossil fuels like coal and natural gas, biofuels, or nuclear fuel in order to heat water and produce steam. The steam spins a turbine to produce electricity, which is then fed into the utility grid. When we burn fossil fuels for electricity, we also produce greenhouse gas emissions that contribute to climate change.

Reducing your energy use can lower the amount of electricity your utility needs to produce, which you can effectively reduce your personal greenhouse gas emissions (and your carbon footprint) with energy efficiency measures. In addition to the direct financial and environmental benefits of implementing energy efficiency measures, coupling energy efficiency with other "green" practices can offer even further advantages.

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Article by

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Nobel Laureate
Antonie Van Leeuwenhoek

Antonie van Leeuwenhoek, (born October 24, 1632, Delft, Netherlands—died August 26, 1723, Delft), Dutch microscopist who was the first to observe bacteria and protozoa. His researches on lower animals refuted the doctrine of spontaneous generation, and his observations helped lay the foundations for the sciences of bacteriology and protozoology.

Early Life and Career

At a young age, Leeuwenhoek lost his biological father. His mother later married painter Jacob Jansz Molijn. When his stepfather died in 1648, Leeuwenhoek was sent to Amsterdam to become an apprentice to a linen draper. Returning to Delft when he was 20, he established himself as a draper and haberdasher. He was married in 1654 to a draper's daughter. By the time of her death, in 1666, the couple had five children, only one of whom survived childhood. Leeuwenhoek remarried in 1671; his second wife died in 1694. In 1660 Leeuwenhoek obtained a position as chamberlain to the sheriffs of Delft. His income was thus secure, and it was thereafter that he began to devote much of his time to his hobby of grinding lenses and using them to study tiny objects.

Discovery of Microscopic Life

Leeuwenhoek made microscopes consisting of a single high-quality lens of very short focal length; at the time, such simple microscopes were preferable to the compound microscope, which increased the problem of chromatic aberration. Although Leeuwenhoek's studies lacked the organization of formal scientific research, his powers of careful observation enabled him to make discoveries of fundamental importance. In 1674 he likely observed protozoa for the first time and several years later bacteria. Those "very little animalcules" he was able to isolate from different sources, such as rainwater, pond and well water, and the human mouth and intestine. He also calculated their sizes. In 1677 he described for the first time the spermatozoa from insects, dogs, and humans, though Stephen Hamm probably was a codiscoverer. Leeuwenhoek studied the structure of the optic lens, striations in muscles, the mouthparts of insects, and the fine structure of plants and discovered parthenogenesis in aphids. In 1680 he noticed that yeasts consist of minute globular particles. He extended Marcello Malpighi's demonstration in 1660 of the blood capillaries by giving the first accurate description of red blood cells. In his observations on rotifers in 1702, Leeuwenhoek remarked that in all falling rain, carried from gutters into water-butts, animalcules are to be found; and that in all kinds of water, standing in the open air, animalcules can turn up. For these animalcules can be carried over by the

wind, along with the bits of dust floating in the air.

The Royal Society and Later Discoveries

A friend of Leeuwenhoek put him in touch with the Royal Society of England, to which he communicated by means of informal letters from 1673 until 1723 most of his discoveries and to which he was elected a fellow in 1680. His discoveries were for the most part made public in the society's Philosophical Transactions. The first representation of bacteria is to be found in a drawing by Leeuwenhoek in that publication in 1683.

His researches on the life histories of various low forms of animal life were in opposition to the doctrine that they could be produced spontaneously or bred from corruption. Thus, he showed that the weevils of granaries (in his time commonly supposed to be bred from wheat as well as in it) are really grubs hatched from eggs deposited by winged insects. His letter on the flea, in which he not only described its structure but traced out the whole history of its metamorphosis, is of great interest, not so much for the exactness of his observations as for an illustration of his opposition to the spontaneous generation of many lower organisms, such as "this minute and despised creature." Some theorists asserted that the flea was produced from sand, others from dust or the like, but Leeuwenhoek proved that it bred in the regular way of winged insects.

Leeuwenhoek carefully studied the history of the ant and was the first to show that what had been commonly reputed to be ants' eggs were really their pupae, containing the perfect insect nearly ready for emergence, and that the true eggs were much smaller and gave origin to maggots, or larvae. He argued that the sea mussel and other shellfish were not generated out of sand found at the seashore or mud in the beds of rivers at low water but from spawn, by the regular course of generation. He maintained the same to be true of the freshwater mussel, whose embryos he examined so carefully that he was able to observe how they were consumed by "animalcules," many of which, according to his description, must have included ciliates in conjugation, flagellates, and the Vorticella. Similarly, he investigated the generation of eels, which were at that time supposed to be produced from dew without the ordinary process of generation. The dramatic nature of his discoveries made him famous, and he was visited by many notables—including Peter I (the Great) of Russia, James II of England, and Frederick II (the Great) of Prussia.

Methods of Microscopy

Leeuwenhoek's methods of microscopy, which he kept secret, remain something of a mystery. During his lifetime he ground more than 500 lenses, most of which were very small—some no larger than a pinhead—and usually mounted them between two thin brass plates, riveted together. A large sample of those lenses, bequeathed to the Royal Society, were found to have magnifying powers in the range of 50 to, at the most, 300 times. In order to observe phenomena as small as bacteria, Leeuwenhoek must have employed some form of oblique

illumination, or other technique, for enhancing the effectiveness of the lens, but this method he would not reveal. Leeuwenhoek continued his work almost to the end of his long life of 90 years.

Contributions to Scientific Literature

Leeuwenhoek's contributions to the Philosophical Transactions amounted to 375 and those to the Memoirs of the Paris Academy of Sciences to 27. Two collections of his works appeared during his life, one in Dutch (1685–1718) and the other in Latin (1715–22); a selection was translated by Samuel Hoole, The Select Works of A. van Leeuwenhoek (1798–1807).

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Article by

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The Great Indian Astrophysicist
Dr. Jayant Narlikar

Dr Jayant Narlikar was born on July 19, 1938, in a highly educated and cultured family in Kolhapur district of Maharashtra. His father Prof. Vishnu Vasudev Narlikar was the Head of the Department of Mathematics at Benaras Hindu University. Thereafter he was Chairman of the Rajasthan Public Service Commission. Jayant Narlikar had his education in Varanasi. His mother was a graduate in Sanskrit from Mumbai (Bombay) University. Besides, she loved English literature. She was graceful, cultured and educated lady.

After his early education in the campus of Banaras Hindu University, and then went to Cambridge for his post-BSc studies (1957). Having distinguished himself at the Mathematical Tripos, becoming Star Wrangler and Tyson Medallist, Narlikar worked under the guidance of Fred Hoyle and got his PhD (1963), having won the Smith's Prize as well as Fellowship of King's College. He was awarded ScD (1976) by Cambridge University. He joined the Institute of Theoretical Astronomy as a Founder Faculty Member (1966) and became Professor at the Tata Institute of Fundamental Research (TIFR), Mumbai in 1972 after returning to India. He was Founder Director (1989-2003) Inter-University Centre for Astronomy.

Dr.Narlikar married Mangala Sadashiv Rajwade in 1966. In 1972, he joined TIFR as professor. Besides research and teaching, he guided doctoral students. Here he continued research on tachyons. Tachyons are particles that move faster than the speed of light. According to Dr Narlikar, Black Holes are bases of tachyons. They absorb light coming from outside and with tremendous pressure contracts the surface of the Black Hole. After coming here Narlikar developed one more activity. To popularize science and especially astronomy among the people he wrote book Akashashi Jadle Nate (Related to the Sky) in his mother tongue Marathi. Besides he also wrote science stories. His books have also been translated into Hindi and Gujarati.

Dr.Narlikar is accomplished science fiction writer who written following books who has written near about 150 various books in English and Marathi. ‘Aakashi Jadale Nate’ is one of

most famous book written by him which was converted into English by Dr.Magla Narlikar as “Adventure-in-Science”

In September 1988, the late Prime Minister Rajiv Gandhi encouraged him to start astronomy and nuclear physics inter university centre. Through the university Grants Commission and central aid such a centre has been made possible. Narlikar was its first director and worked as Homi Bhabha professor. In 1988, he attended an international conference on astronomy at Baltimore in America. On January 10 1989, the National Science Academy honoured Narlikar with the Venu Bappu Memorial Award for 1988. This award includes Rs. 25000 in cash and a medal. In 1990 he was awarded the Indian Science Academy’s Indira Gandhi Award and in 1996, UNESCO’s ‘Kalinga Award’. Recently, on March 12, 2003, the Yashwantroa Chavan Rashtriya Puraskar

2002 was presented to Dr.Narlikar

Research and Academic Achievements: Dr.Narlikar specialized in astrophysics and cosmology. His research work in Cambridge was on the development of the steady state theory as a viable theory of the universe and on action at a distance approach to electrodynamics and gravity. His work with Hoyle on gravity led to what is today known as the Hoyle-Narlikar Theory of gravitation. This theory established a long-sought connection between Mach's principle and general relativity and was later adapted by Narlikar to explain the observed anomalous redshifts. At TIFR, he established a theoretical astrophysics group of repute. His work with Chitre in 1978 on the explanation of apparent superluminal motions in quasars through gravitational lensing, preceded the general enthusiasm for gravitational lensing. In 1977, Narlikar initiated a long-term programme of conformal quantization of gravity which led him to the avoidance of space time singularity in quantum cosmology. In 1993, he joined with Hoyle and Geoffrey Burbidge in proposing an alternative to big bang cosmology, known as the quasi-steady state cosmology. He guided 12 students for Ph.D.

Other Contributions: Jayant Narlikar is credited with setting up the internationally known institution, IUCAA at Pune as a resource centre in astronomy and astrophysics. He created a niche for himself as a science communicator, through his articles, books, TV programmes, science movies, etc. He has served on the Indo-US Sub-commission on Education and Culture (1985-89) and on the Science Advisory Council to Prime Minister (1986-89).

Honours and Awards: Professor Narlikar was conferred several awards for his research work and science popularization, notably INSA's Vainu Bappu Award, SS Bhatnagar Award, MP Birla Award, French Astronomical Society's Janssen Medal, INSA's Indira Gandhi Award and UNESCO's Kalinga Award. He was elected Fellow of the Indian Academy of Sciences, Bangalore, National Academy of Sciences (India), Allahabad, and the Academy of Sciences for the Developing World (TWAS). He was also President of the Cosmology Commission of IAU (1994-97).

In a telephonic interview with The Indian Express, Narlikar said he was deeply concerned about the fact that despite excellent work at many laboratories in the country, no scientist from India had won a Nobel Prize since 1930, when it was awarded to physicist C V Raman.

"This is a reason to worry as plenty of good work is taking place at some of the laboratories in India. There should be some effort to publicise it internationally," Narlikar said. "We do not seem to be pushing our work at the international level as much as we should".

Dr. Narlikar, who did pioneering research in astronomy and cosmology, including work on the origins of the universe, said India had plenty of opportunities to participate in cutting edge scientific research at the global level. "India is a partner in various international-level research projects, including LIGO (a project to detect and measure gravitational waves) and ITER (a project to build a fusion nuclear reactor). The country's role in the Thirty Metre Telescope project is also significant. This is an ambitious project, in which a new class of extremely large telescopes will allow us to see deeper into space and observe cosmic objects with better sensitivity," he said.

Dr.Narlikar said his field — astronomy and cosmology — was becoming more interesting in recent years, and he was happy to see many young students in the country take up this discipline. "… Several IISERs have come up and a lot is being done to attract young talent to basic sciences. If our youngsters work with dedication, there is a lot to do and achieve," he said.

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मुंबई विद्यापीठ
UNIVERSITY WITH POTENTIAL FOR EXCELLENCE
Best College Award
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Senior Science College
Dapoli, Dist – Ratnagiri 415 712
in recognition of valuable academic achievements and participation of the college teachers in the university system through various mechanism of the University.
Mumbai, 26th January, 2018