Newspaper Clips

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Business Standard ND 19/10/2011
P-12

IS THE QUALITY OF IIT STUDENTS DECLINING?

Yes, thanks to coaching classes and, paradoxically, the IIT brand but let's also give credit where it is due

DEBATE

GAUTAM BARUA
Director, IIT Guwahati

Students get used to a system of 'spoon feeding', prevalent in coaching classes and they are slow to adapt to the Institute's way of teaching

THE quality of Indian Institute of Technology (IIT) students is certainly declining. We have to, however, first clarify what we mean by "quality". Since IITs are technical institutes, for me the quality of students as engineers is the defining criterion. Students may be intrinsically good or brilliant, but their quality as engineers is definitely declining. The first reason is the impact of coaching classes on students entering the IIT system. Most of the students are mentally fatigued when they enter an IIT. Many are already burnt out and are no longer able to perform to their potential. Students also get used to a system of "spoon feeding", which is prevalent in coaching classes and they are slow to adapt to the Institute's way of teaching, where emphasis is laid on extra reading, on showing creativity, and on applying reason and logic to solving problems. Students, therefore, do not work as hard, or learn as much of their subject, as earlier students used to.

There is another major reason the quality of students is declining. The strength of the IIT brand has made admission into one of these institutes a dream goal for many students and their parents. This dream is independent of the career path that a student may wish to follow. An IIT degree, it is felt (and with some justification), will automatically enable the student to get a lucrative job in the area of her choice. Most of the time, the career choice is made based on the perceived financial benefits. Therefore, at the top of the agenda is a career in finance. Many others go into management after graduation. Then there is a fraction that is looking for an Indian Administrative Service selection.

In my assessment, about 50 per cent of the students in a batch are not interested in a career in engineering after graduation. Another 30 per cent are not sure what they want, or are struggling through their programme owing to handicaps they have brought with them, or because they are burnt out. So, only 20 per cent of the students are "good". N R Narayana Murthy has come up with a similar figure.

So how do we improve the "quality" of IIT graduates? Based on the points above, the obvious answers are to increase the numbers of those who are really interested in a career in engineering or science, and to reduce the cases of mental fatigue. As far as the latter is concerned, the IIT Council has been discussing this issue and it has been decided in principle to do away with the Joint Entrance Exam (JEE) and instead use school results and the results of an aptitude test to decide admission. The wide variety in school board exams is sought to be handled by using the percentile rank of a student as the absolute marks of the school result. This will mean that the marks a student obtains will depend on her rank in her Board and on the size of the Board in which she is appearing.

Will coaching disappear then? I feel that coaching institutes will then have to convert into schools. A student will then be "coached" at only one place, his school (well, "taught" rather than coached!). But that is the aim of schooling, isn't it? How to handle the first issue? The problem here is not only the attitude of students and parents, but also of those who hire. Industry and business "know" that hiring an IITian will ensure quality, and so corporations hire IITians irrespective of the area of their business. So what we need to do is spread the "good" students over a larger number of institutes, each specialising in different fields. We already have many institutes (colleges and universities) teaching courses in economics, commerce, sociology, and so on. The challenge is to improve their brand value. This is a larger issue requiring a wider debate. One tongue-in-cheek suggestion is to convert the IIITs (Indian Institutes of Information Technology) into IIIBLESITs (Indian Institute of Business, Law, Economics, Sociology and IT), increase their sizes, and invest heavily in building and marketing them. Or maybe the Indian Institutes of Management could add undergraduate courses in their programmes, as one of them has already done?

S PRASAD
Former Director, IIT Delhi

To describe the entire student community as not being up to the mark is uncalled for. It hardly does justice to the excellent students in these institutions

IT is nobody's case that the admission processes of the IIT system are perfect. Having reduced the question paper to a multiple-choice, objective test, imperfections have crept in, which the coaching institutions have exploited. Therefore, it is impossible to guarantee that everyone who has cracked the Joint Entrance Examination is brilliant. There is no doubt that there is great scope for improving our admission processes and factoring in more information about the candidate than performance in a single test. Perhaps factoring in school results, as is being considered, will help. Perhaps we need to include a component of subjective testing, as used to be done in the past. There are many dimensions for bringing in such improvements.

But to describe the entire student community as not being up to the mark is uncalled for. It hardly does justice to the excellent students that these institutions harbour and in whom they can take pride. It can unnecessarily demoralise the students and faculty alike. Having been an IIT undergraduate myself and having spent some 40 years as a teacher in the IIT system, I can say with first-hand knowledge that the undergraduate student population today has broadly the same mix as it has always had. Contrary to popular perception, there has always been significant variation in the calibre of students joining the IITs, almost from day one.

It is, however, important to mention that two major transformations of the IIT system are under way. First, thanks to a parliamentary decision, there is a much greater "democratisation" of the system by design, replacing its earlier elitist character. Second, it has made an effort to reposition itself as a research university system, in which postgraduate education and research are as important as undergraduate education.

The democratisation has obviously been designed to make quality IIT education accessible to a much more diverse student population and will, therefore, necessarily lead to admission of students who are less prepared. It is hoped that it can fulfil the aspirations of the young population with a wider base, and provide an opportunity and a gateway to the brightest and the most ambitious of the masses to rise in social and economic status. In essence, therefore, while reforming the admission process should be an important agenda for the IIT system, an even greater task is to quickly learn to handle this wide diversity in the campus. There is clearly a need to devise educational paradigms, which make the entire, enlarged body of students to become equally competent. Moving forward, this has to be a key agenda for the IIT system, even as the nation needs to make parallel efforts to improve the schooling system, especially in the rural areas. The curriculum changes at the IITs increasingly reflect their sensitivity to this need.

Coming to the second aspect, IITs today are equally concerned about their image as research universities. In fact, the older IITs today have larger numbers of postgraduate and research students than undergraduates. This contribution in building a solid and useful technological human resource base needs to be acknowledged as much as their contribution to admitting and nurturing elite undergraduates. It can be argued that the IITs are nowhere near the likes of Massachusetts Institute of Technology and Stanford in their research output. However, for a country that has started to make reasonably serious investments into research only in the last 10 to 15 years, IITs have not done too badly, considering the usual parameters to measure this success — the quantity and quality of research publications, PhDs and so on. Let us not forget that before the advent of the Internet, and owing to inadequate opportunities to travel abroad, IIT faculty (and for that matter, most Indian scientists) and research students were terribly out of sync with the rest of the world in terms of access to latest research and availability of quality infrastructure.

While introspection and self-criticism are important tools for making progress, it is important to give credit where it is due. IITs are rightly evolving to the next stage: becoming research universities in the global sense, where admission to undergraduate programmes becomes "difficult" rather than remaining "impossible", and where motivated students pursue advancement of knowledge in well-equipped labs, and are mentored by good researchers.

Pioneer ND 19-Oct-11 P5

Inaction reveals IIT faculty nexus in JEE bunglings

PIONEER NEWS SERVICE ■
NEW DELHI

IIT Roorkee has failed to lodge any FIR so far against mass copying and irregularities at one of its Joint Entrance Examination (JEE) centre at Bhatinda in defiance of the directives of the then Chairman, IIT Joint Admission Board 2011 (JAB) and Director IIT Kanpur, even after four months. This has come to light through a response to a RTI query filed by Vipin Gupta.

During IIT JEE 2011, an aspirant, appearing at Giani Zail Singh College of Engineering & Technology, Bhatinda had lodged a written complaint that some of the JEE candidates, in her examination room, were helped by the invigilators and the college staff and that there was mass copying by students at the centre.

After the bungling got established by an inquiry committee, IIT-Kanpur, the organiser of the Joint Entrance Examination this year, took serious note of the allegation. Since Bhatinda centre falls under IIT-Roorkee, Director IIT Kanpur, advised its Director, and the Chairman, JEE, IIT Roorkee to lodge an FIR with the local police authorities so that "the matter could be further investigated to apportion the blame on the concerned person(s)".

While the RTI response revealed inaction in this regard sources further added that that certain "privileged" JEE candidates got their roll numbers in a sequence and thus were seated in a single room. "This obviously could not have been possible without the connivance of IIT JEE Roorkee officials," sources pointed out.

IIT ROORKEE HAS FAILED TO LODGE AN FIR AGAINST MASS COPYING AND IRREGULARITIES AT ONE OF ITS JOINT ENTRANCE EXAMINATION CENTRE AT BHATINDA EVEN AFTER FOUR MONTHS. IN ANOTHER CASE, AN RTI QUERY HAS REVEALED THAT SON OF AN IIT KHARAGPUR DIRECTOR & JAB CHAIRMAN WAS CAUGHT IMPERSONATING IN JEE AT A DELHI CENTRE. YET NO FIR WAS LODGED, NO PROBE WAS CARRIED OUT BY CBI OR POLICE SO FAR

What is worse, the IIT Roorkee faculty members, Professor CSP Ojha (Civil Engineering) and Professor Prakash Biswas (Chemical Engineering), who were supervising the JEE Examination at Bhatinda centre had remained silent to the complaint of copying, the sources pointed out.

Further, the issue was kept under wraps by the concerned faculty members. It was brought to the fore by a parent of the JEE aspirant, who had to lodge a written complaint with the Chairman, JAB and Director, IIT Kanpur. "With no FIR lodged as yet, only compounds to our suspicion," they added.

The sources pointed to a similar incident in 2008 from a centre in Kota in Rajasthan. The JAB later decided to cancel Kota as a centre for IIT-JEE. There is no JEE centre in Kota since then. However, the inquiry committee's findings were not disclosed.

In another case, an RTI query has revealed that the son of an IIT Kharagpur Director & JAB Chairman, Prof SK Dube was caught impersonating in JEE at a Delhi JEE Centre. Yet no FIR was lodged, no investigation was carried out by CBI/police, so far.

Times of India ND
19-Oct-11 P13

IIT-Roorkee in dock over mass copying

Akshaya Mukul | TNN

New Delhi: IITs, considered as the repository of high standard, do not think copying is a crime. The Joint Admission Board (JAB), which conducts JEE for admission to IITs, has directed IIT-Roorkee to file an FIR on mass copying in the Bhatinda centre during this year's entrance test held more than four months ago.

In an RTI reply, IIT-Roorkee has said the FIR has not been lodged and the decision is still pending. IIT-Roorkee was asked to file an FIR since two of its faculty members — Prakash Biswas and C S P Ojha — were sent as invigilators to the Bhatinda centre for conducting the JEE.

A fact-finding committee, set up by JAB, has barred Biwas and Ojha along with Sushil Kumar, another IIT-Roorkee staff, from any JEE-related activities for five years. The report had said that there "appears to be some nexus amongst the college authorities, certain invigilators and an employee of Giani Zail Singh College (centre for JEE)".

Hindustan Times, ND 19/10/2011 P-6

Moving to one IIT entrance

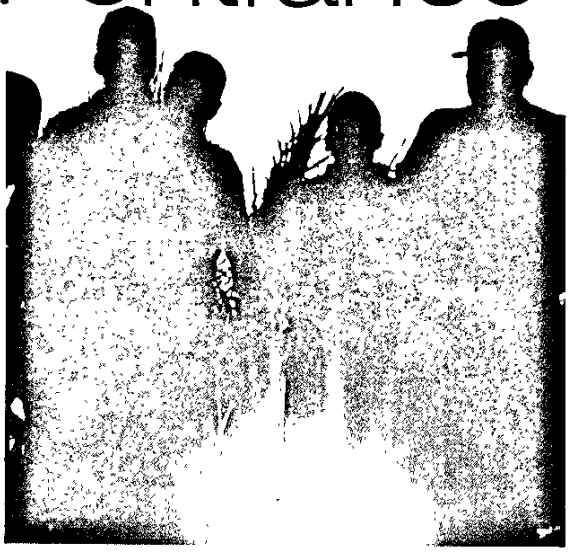
Though a welcome move, we give you the three main concerns and the council's response

Pankti Mehta and Pooja Biraia
■ pankti.mehta@hindustantimes.com

The council of the Indian Institutes of Technology (IITs) proposed a pan-India entrance test for aspiring engineering students, to be started from the 2013 academic year, to replace the IIT joint entrance examination as well as those currently in place at various state engineering colleges. The proposal also aims to increase the weightage given to Class 12 marks.

While students and academics welcome the decision, saying it will benefit students as they will not have to take several separate entrance tests, they suggest that the panel plan the new exam to avoid discrepancies.

"The single test is expected to come into effect in 2013," says Devang Khakhar, director, IIT-Bombay. "We're taking our time to launch it, and it will probably be an online test for better computation. There will be one merit list for all colleges to choose from."



QUALITY OF EXAMINATION MATTERS MOST

"The merits of the decision... will bear fruit only if it is structured in a way that facilitates selection for each type of institute," says KC Tiwari, principal, Bharati Vidyapeeth Institute for Engineering. "The SAT, GMAT and GRE systems have proved successful in this regard. Each institute must, however, be given options to include additional criteria."

"The IIT JEE is conducted by a qualified panel that knows IITs' requirements well," agrees Nipun Katyal, an IIT-B alumnus and a management consultant. "Ideally, we should keep the JEE intact and club the others into one exam, and perhaps extend the JEE merit list so that quality colleges that are ranked just below the IITs can also have their pick."

WHAT WEIGHTAGE TO CLASS 12 MARKS?

"It should be made clear how much weightage the Class 12 marks are given," says Nipun Katyal, an IIT-B alumnus and a management consultant. "It is almost impossible to normalise marks from different boards so that there is fair competition. A detailed statistical study is required, after which systems can be put in place to equalise different boards, but these can't remain watertight solutions. If an accurate system is not in place, they should perhaps not include the board marks."

IIT-Bombay director Devang Khakhar says the council will develop a fair method to standardise marks from boards.

A SINGLE STANDARDISED TEST

"Standardisation is essential," says Seema Shah, acting principal, Vidyalankar Institute of Technology. "One centralised examination will enable students to work hard to crack the exam in the best possible way. With too many entrances, students... lose focus. Moreover, a single test will ensure a standardised evaluation and a defined time span for admissions."

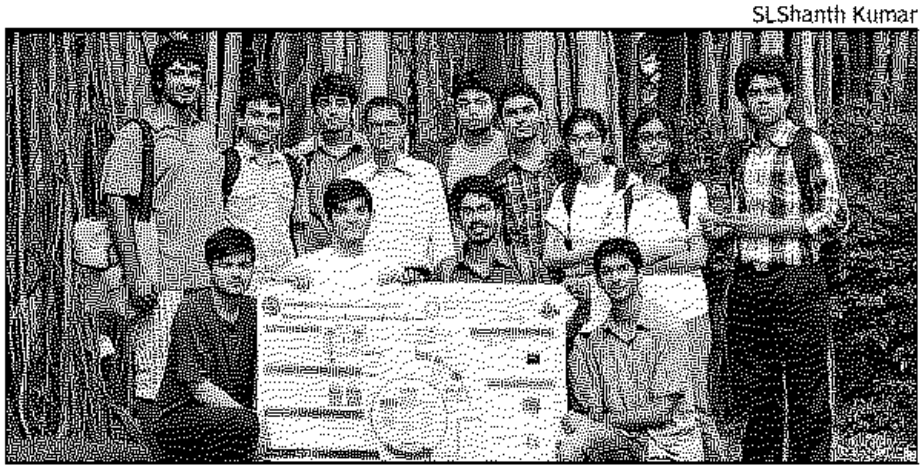
However, a single exam may put too much pressure on students, say some experts. "While it is a welcome idea, it must be planned properly. A student may not be feeling well on that day, or may have circumstances that render him or her unable to prepare properly," says G Raghurama, director, BITS Pilani. "Therefore, the exam should be conducted two or three times a year to give the student the best opportunity." The council is yet to decide upon the logistics, and how often the test will be held.

Times of India Chennai 18.10.2011 p-5

IIT-M biotech students devise technique to prevent superbugs

TIMES NEWS NETWORK

SLShanth Kumar



BREAKTHROUGH: Biotechnology students from IIT Madras have come up with a method to grow E. coli bacteria feeding on sunlight. E.coli is widely used in research

Chennai: Many scientists and experts fear that antibiotic-resistant bacteria, such as the superbug that is rattling the medical community, originate in laboratories. And a team of 11 biotechnology students and one electrical engineering student from IIT Madras has formulated a new technique to grow bacteria without using antibiotics to kill other bacteria types in a bioreactor. In biology, the standard procedure to grow one type of bacteria in a reactor involves making the desired bacteria resistant to an antibiotic and then introducing the toxin to kill all the other bacteria.

Using genetic engineering, the students extracted the DNA sequence from the proteorhodopsin gene in marine bacteria, modified it to make it more user-friendly for research, and inserted the sequence into E.coli bacteria. The bacteria read the DNA and started producing the proteorhodopsin protein, which is capable of absorbing light and producing energy that it uses to multiply. This means the protein-injected bacteria can multiply in the absence of food – sugar – while others cannot. The energy produced in the cell can also be used to improve the manufacturing process of certain biochemicals, said Kousik S, a member of the team.

HindustanTimes
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Author :
Location :
Article Date : 10/19/2011

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Tribune ND 19-Oct-11 P8

New education policy draft ready

Committee to discuss recommendations with Sewa Singh Sekhwan today

SARBJIT DHALIWAL
TRIBUNE NEWS SERVICE

CHANDIGARH, OCTOBER 18

The draft of the new education policy is ready and its salient features would be discussed with Education Minister Sewa Singh Sekhwan here tomorrow. Three separate policy documents have been prepared for primary schools, secondary schools and for colleges, universities and other such institutions.

Revealing this, Nishan Singh Kahlon, nodal officer of the committee set up to prepare the policy, said: "We have held 33 meetings to prepare the draft of the policy. After discussion with the Minister, it will be formally submitted to the state government."

Headed by Guru Nanak Dev University's former Vice-Chancellor Dr SP Singh, the committee has proposed to set up a state school education accreditation and assessment board to evaluate the standard of education in various school-level academic institutions. For colleges, a university education board has been proposed, which would conduct examination so that the universities could focus on research and also on the improvement of academic standards. It has proposed to set up Punjab state higher education council to regulate higher education. Uniformity in syllabus of all universities in the state has been proposed.

The committee has recommended the constitution of a school regulatory authority to oversee the administrative and academic functioning of government schools, aided schools, recognised schools and non-recognised schools. The proposed authority, it says, should fix the academic qualifications, service conditions, salary of teaching staff and fee structure in schools. It has recommended the constitution of permanent teachers' selection board to fill the vacant posts of teachers.

KEY PROPOSALS

- Setting up separate boards at school, college and university level to evaluate the standard of education
- Uniformity in syllabus of all universities
- Body to fix qualification, service condition, salary of teaching staff and fee structure norms in schools
- Earmarking at least 6 per cent of state's GDP for spending on education
- Special increments for state and national award winning teachers and also for those holding higher qualification such as MPhil and PhD
- Reducing the number of holidays in secondary schools

Setting up government model science collegiate schools in each tehsil has also been proposed in the draft. The structure of such schools has also been explained.

The restructuring of the Punjab School Education Board (PSEB) as an autonomous body has also been recommended. Then, the committee also wants an end to the semester system introduced by the PSEB at the secondary level. "The new system has failed to serve the purpose and the board should switch to the old annual system of examination," says the document.

The state should earmark at least 6 per cent of its GDP for spending on education and of it, 60 per cent should be non-plan expenditure (on salaries, etc) and remaining should be from the plan for development of educational institutions. Special increments have been recommended for state and national award winner teachers and also for holding higher qualification such as MPhil and PhD.

There is also a proposal to reduce the number of holidays in secondary schools. Besides summer vacations for 30 days and a seven-day break during winter, 10 gazetted holidays have been proposed.

Business Standard ND 19/10/2011
P-12

CHINESE WHISPERS

IIM Tirupati?

The Indian Institutes of Management (IIMs) may be the most premier institutes for management studies in the country, but even they don't measure up when it comes to competing against the legendary Tirupati temple in Andhra Pradesh. Recently, when faced with questions about their money-raising abilities, the director of one of the leading IIMs remarked that while they were struggling to raise funds, despite being "temples of learning", they felt inferior to Tirupati, which raises an average of ₹2 crore a day.

Indian Express ND 19/10/2011 P-9

MBA: No change in multiple test system

CMAT to be held in February next year

DIPTI SONAWALA
MUMBAI, OCTOBER 18

THE All India Council for Technical Education (AICTE) has announced that the Common Management Aptitude Test (CMAT) will be conducted in February 2012 instead of 2013 as initially decided. While CMAT was expected to be a single entrance test, the authorities say they have no plans to change or stop the other entrance tests.

Earlier this year, AICTE authorities had mooted the idea of a national-level single entrance with a view to give relief to students from preparing for several aptitude and entrance tests. However, authorities say this year their focus is to implement CMAT successfully.

"Since CMAT will follow the same pattern as other tests, the students can be easily spared from paying for and preparing and taking different competitive exams for admission to management courses across the country," said Anil Kumar Shukla, AICTE regional officer for the western region. "From 2012 aspiring management students can prepare for CMAT, which will be accepted by all AICTE approved management colleges. It will be applicable for admissions in postgraduate MBA courses and postgraduate diploma in business administration."

AICTE wanted CMAT to help reduce the stress and financial burden on students. However, the idea did not go down well with the B-schools and various organisations like Association of Indian Management Schools (AIMS) and the Society for Promotion of Education in India, which challenged AICTE's December 28, 2010, notification. The notification called for sweeping changes in the way B-schools conduct their entrance process and conducting one single entrance/aptitude test for admissions to management colleges.

However, some of the private B-schools had objected to this notification and subsequently approached High Court and Supreme Court for relief. On July 26, 2011, the Supreme Court had allowed AICTE to conduct its own entrance exam.

"Does this mean there will be yet another entrance test in the list now? Students want to ensure they get admission in a good college and for that they will appear for all the tests. I don't think this will work," said a director of a well known B-school in Navi Mumbai.

"As of now we have no plans to bring about any change in the current multiple entrance test system. We have to work as per the court's order and so for now we are just conducting CMAT," added Shukla.

Tips, Trivia & Trends

YOUR DAILY DIET OF FUN AND FACTS

Top Global B-Schools

An MBA is a lifetime investment. Here are the 10 best programmes, according to EIU

Rank	B-School	Total tuition fees, $
1	Dartmouth College Tuck School of Business, (US)	101,400
2	University of Chicago Booth School of Business, (US)	101.800
3	IMD - International Institute for Management Development, (Switzerland)	57.692
4	University of Virginia Darden Graduate School of Business Administration, (US)	99.000
5	Harvard Business School, (US)	102.400
6	University of California at Berkely- Haas School of Business, (US)	104.656
7	Columbia Business School, (US)	106.416
8	Stanford Graduate School of Business, (US)	110.400
9	York University, Schulich School of Business, (Canada)	63.000
10	IESE Business School University of Navarra, (Spain)	94.267

Source: The Economist Intelligence Unit

2.7 bn

the number people who will face severe water shortages by 2025 if consumption continues at current rates. An estimated 1.8 billion people will live in areas plagued by water scarcity and 36 countries with 1.4 billion people are projected to be either freshwater scarce or cropland scarce.

Source: UN

STATESMAN ND 19/10/2011 p-10

Doing it like DNA

The old stencil process and the modern Xerox, for images, may become possible for real things, says s ananthanarayanan

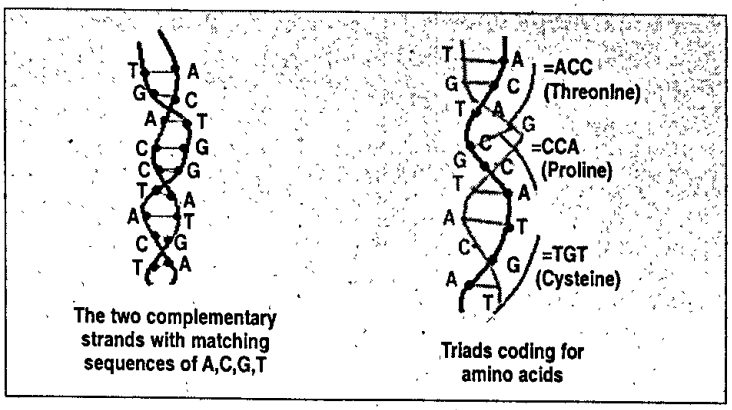
CREATING copies has many uses — one area is in images and documents, another is in the natural world, of biological reproduction. A group of scientists at New York University has made progress in mimicking the biological method for replicating molecules or artificial, nanometer-size structures. "Our findings raise the tantalising prospect that we may one day be able to realise self-replicating materials with various patterns or useful functions," say Nadrian C Seeman, Paul M Chaikin and others of the Centre for Soft Matter Research at NYU in a paper just published in the journal *Nature*.

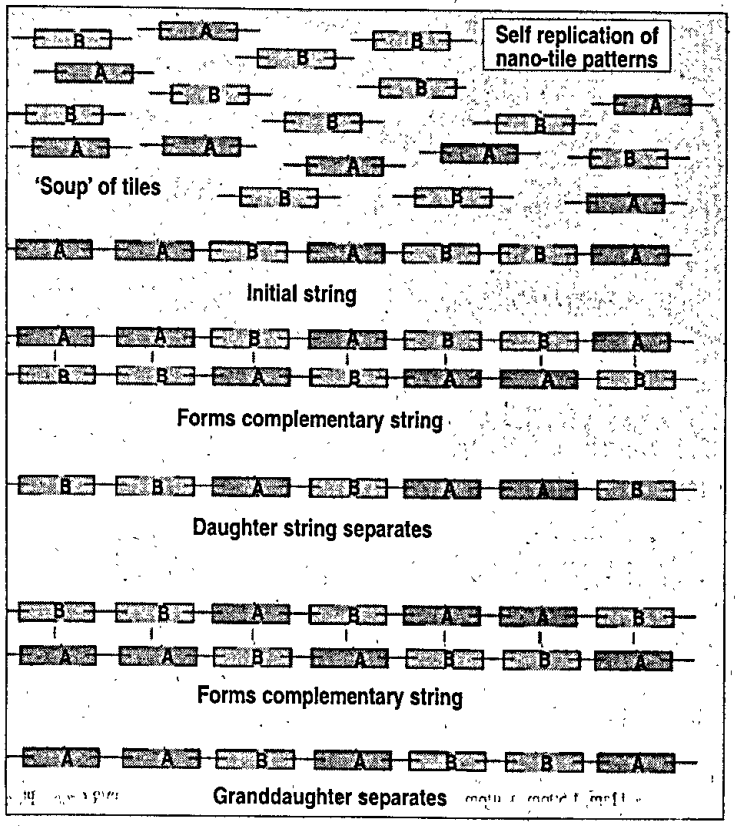
The work of Crick and Watson laid bare the elegance and ingenuity of the genetic code, both in function as well as the manner of its replication in the reproduction of living organisms. Each living cell contains, in its nucleus, a mega-molecule, the DNA, a string of triplets of just four basic molecular units. Each triplet forms the template for the synthesis of a specific amino acid, the building block of proteins.

As each unit in the triplet can take four forms, there can be 4x4x4=64 distinct triplets. But with provision for redundant forms and some housekeeping, the code describes only 20 amino acids, whose sequence in the DNA can define millions of proteins. The DNA thus contains the information for all processes and functions in an organism and makes for the complex yet exact and distinct construction of the enormous number of living species.

The definition of the four basic units to describe the amino acids also serves to enable the DNA to both remain stable and to replicate during reproduction of the cell. The act of reproduction, in fact, is nothing but the replication of DNA. The four basic units of the DNA, called A, T, G and C, have the property of attaching to each other, but in specific pairs — A with T and vice-versa or G with C and vice-versa. Thus, if there is a string, say, A, T, C, CT, G, as part of a strand of the DNA molecule, then each unit would attach, from the chemical soup within the cell, with units T, A, G, GA, C as complements of the original string. In this way, the millions of units in a full DNA string would have a complementary string alongside, and the two strings are joined at these pairs, right along their length, in the form of a helix.

One feature of the bonding is that the bond of the units along the length of the DNA is stronger than the bond of A to T and C to G, as complements. Thus, when the chemical signals of the time for a cell to divide are present, the lateral bonds between the strands of the DNA molecule separate but the backbone, which is bound by stronger ties, stays intact. And the two parts of the dividing cell carry away one strand each. As the units of each strand code for the corresponding matching unit, the single strands in the newly formed cells rapidly replace the missing, complementary units, which form bonds between themselves and the two parts of the DNA molecule are complete again, for the cell to function normally! These two cells can again split into two more, and the resulting four cells into another eight and so on, which can lead to very fast growth of tissue through cell division.





This elegant and simple method employed by living things holds out the prospect of using molecular templates for the generation of substances. Just as sequences of triads in the DNA code for specific proteins, we now have methods to build strands of molecules that could be capable of picking out components and assembling complex molecules. But equally attractive is the possibility of creating ways for existing molecules or materials to create copies of themselves, ideally, at the expanding rate of tissue growth. The work of Seeman, Chaikin and others is a first step in realising replication — through the use of components made of a combination of DNA segments.

The components used were a pair of only two *molecular tiles*, say A and B, to create a simple mosaic, like AABABBA. The objective was to get this string to attach to a complementary string, ĀĀBĀBBĀ, picking up the complementary units and assembling the string from the chemical environment.

The tiles were developed using 10 DNA strands each, in principle capable of millions of combinations, not just two forms. But two forms were used for the simple trial and each one was marked by chemical features so that they could be identified with the use of an *Atomic Force Microscope*. The first unit in the string was an "initiator", an A-like tile, attached to a magnetic bead — giving the string the form of: "I A B A B B A". The Atomic Force Microscope could then read off the sequence in the first, or "seed" string and then verify whether the "daughter" string that the seed was to clone was correctly formed.

In the experiment, the tiles were first separately formed from the constituent DNA segments, with ends fashioned so that the tiles would attach in a particular order, like AABABBA, in the example. When the tiles prepared like this were mixed, and they formed strings, a chemical marker was added to identify the "As" and the sequence order was verified with the Atomic Force Microscope. In the meantime, the complementary tiles, the "Ās" and the "Bs" were also prepared. When these were mixed with the "seed" strings, each complementary tile joined its counterpart and formed the "daughter" string. As in the case of natural DNA, the longitudinal adhesion was kept stronger than the lateral ties. Gentle heat could then separate the pairs of strings and a magnetic bead could be attached to one end of the "daughter" strings. The Atomic Force Microscope then verified if the replication was accurate.

The results showed a 70 per cent accurate creation of daughters. The next step was the creation of "granddaughters", or the replication of the daughters using the first set of tiles as complementaries. As the initial strings were not separated before the "second generation", separate markers were added to the second generation tiles for identification. The result was a similar level of creation of accurate "granddaughters", which then added to the number of the initial strings. Further generations would hence create larger numbers, as a growing progression.

The process is cumbersome and at 70 per cent replication is still not the runaway expansion of natural systems. But it does demonstrate that replication is possible, not just of DNA but of more complex forms, carrying information, shape and, conceivably, function. "We expect that... and other improvements will deliver a robust replication method that is applicable to molecular, nanometer-sized and colloidal systems displaying programmed recognition," say the authors.

The writer can be contacted at simplescience@gmail.com

Pioneer ND 19-Oct-11 P13

GATE-way to SUCCESS

With the Graduate Aptitude Test in Engineering (GATE) exam just a few months away, aspirants are busy with last-minute preparations to make it to top engineering and science institutes. There are a million applications for this exam in 2012, says SANGEETA YADAV

There is an increased scope in job prospects for those who have pursued engineering and other allied subjects. "We have already witnessed a record number of applicants who have applied for the Graduate Aptitude Test in Engineering (GATE) this year. Last year, around six lakh people appeared for the exam but this year, more than a million people have registered themselves so far. One of the possible reasons for this upcoming trend this year is due to the decision taken by many Public Sector Units (PSU'S) of recruiting directly through GATE results. Moreover, it is found that after clearing MTech, students are well-placed," Professor Jagdish Kumar, organising chairman for GATE, tells you.

ABOUT THE EXAM

The exam is all India and conducted jointly by the Indian Institute of Science (IISC) and eight Indian Institutes of Technology (IIT) on behalf of the National Coordination Board — GATE, Department of Higher Education, Ministry of Human Resource Development, Government of India. The main aim of this test is to identify suitable candidates for engineering and research purposes.

IITs and IISc always try to innovate and introduce new systems to test the basic knowledge of candidates in various fields. As a part of that innovation, this year many new changes have been made in Gate 2012. "In GATE 2012, there are 21 papers out of that six papers will be online. Last year, we had four online papers — Geology and Geo-Physics (GG), Aerospace Engineering (AE), Textile Engineering and Fabric Science (TF) and Mining Engineering (MN). For the test this year we have introduced two additional papers which will be conducted online — Architecture and Planning (AR) and Agricultural Engineering (AG). Scholarship is available for the needy students. Last year more than 15,000 students availed the scholarship," says Professor Jagdish.

In the new format, online papers will have questions of multiple choice type and numerical answer type. For multiple choice type questions, each question will have four choices for the answer. For numerical answer type questions, each question will have a number as the answer and choices will not be given. Moreover, the sale of application forms through banks and GATE office counters and sending admit cards by post to the candidates have been discontinued in this new format. The candidates need to register and fill the application online only by accessing the GATE websites of IISc and eight IITs. Also the admit card can only be downloaded from the zonal GATE websites from 2nd January 2012 onwards. The pre-final year students are not eligible to write GATE 2012.

Public Sector Units like Bhabha Atomic Research Centre, Nuclear Power Corporation of India Limited and Hindustan Aeronautics Limited, will be giving more importance to GATE scores for various job positions in their organisations

According to experts it is not easy test to crack. "The exam, is very tricky. Although three to four months of dedicated preparation will lead the students to a good rank. The concept matters a lot and the basic should be clear. One should solve mock papers. Numericals are very difficult and for every wrong answer there is negative marking. Questions are inter-related and if your answer is incorrect the other will automatically gets wrong," says Sakshi Kohli, one of the top rank holders of exam and a PhD student at IIT, Delhi.

FOR THOSE WHO CRACK TEST

Qualified students get opportunities such as attractive scholarships, assistantship for postgraduate courses at some of the best engineering institutes in India. There are several engineering colleges and institutes that specify GATE as an obligatory qualification even for admission of students into post-graduation programmes. In addition to options waiting such as M.Tech, M.Sc. and M.E, GATE qualified candidates also become eligible for the award of junior research fellowship in Council of Scientific and Industrial Research Laboratories.

SCOPE

After qualifying GATE, candidates will get to explore more education avenues for further evaluation.M.Tech degree is mandatory to apply for faculty or research positions in educational Institutes or research and development centers. One can also work as plant engineers, manufacturing engineers, quality engineers, process engineers and industrial managers in different industries, management and service sector in the middle management cadre. PSU's like BARC (Bhabha Atomic Research Centre), Nuclear Power Corporation of India Limited (NPCIL), Hindustan Aeronautics Limited (HAL) etc. give importance to GATE scores for various job positions in their organisations.

ELIGIBILITY

- Bachelor's degree or post-graduate diploma holders in BSc, engineering or technology or architecture and those who are in the final year of such programmes.
- Master's degree holders in any branch of science, mathematics, statistics, computer applications or equivalent and those who are in the final year of such programmes.
- Candidates with qualifications obtained through exam conducted by professional societies recognised by UPSC/AICTE (AMIE by Institute of Engineers; AMICE by Institute of Civil Engineers) as equivalent to BE/BTech are eligible to apply for GATE 2012.

EXAM STRUCTURE

The exam consists of a single paper of 3 hours duration which contains 65 questions carrying a maximum of 100 marks. The question paper will consist of only objective questions. The pattern of question papers is given in Section 4. Each paper shall have a General Aptitude component carrying 15 marks.

IMPORTANT DATES

- Last date for submission of online application — October 21 2011
- Last date for receipt of printed version of online application — October 28, 2011
- Online exam — January 29, 2012 (9 am–12 pm & 2 pm –5pm)
- Offline exam — February 12 2012 (9 am–12 pm & 2pm–5pm)

Hindustan Times, ND 19/10/2011 P-5

CAT: Rise after a drop

Why has the number of CAT 2011 applicants increased (though marginally) after last year's dip?

Pooja Biraia and Sucharita Kanjilal
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This year about 2.05 lakh candidates have registered for the CAT, the entrance test for the Indian Institutes of Management (IIMs) and 150 other business schools in the country. However, this is the first year when the number of applicants has increased, though marginally, after a drop last year (2.04 lakh) and the year before in 2009 (2.42 lakh). It's also observed that of the total number of registered candidates, the number of male applicants has far surpassed that of the women. Experts, students and academicians give their views on this sudden spurt in applications and on the gender trend.

Given that the number of applications started dropping after the onset of the economic slowdown in 2008, the reason for the increase in applications can be attributed to the positive placement scenario last year, which encouraged more students to apply, says Janakiraman Moorthy, CAT 2011 convenor. "Good placements last year have encouraged more people to apply. This is also an indicator that our economic situation is improving," he said.

Another reason for the rise is the decision of other institutions to accept scores of this test in their selection process, starting this year.

"Registrations might have increased marginally because the management schools of the Indian Institutes of Technology and the Faculty of Managements Studies, University of Delhi, have subscribed to the CAT this year onwards," said Moorthy. Though it's a marginal development, the rise in applications can also be attributed to the change in the format of the CAT, says Parag Chitale, director, CPLC. "Till last year, a lot of students would focus on their strong sections and utilise the extra time for the remaining sections. However, with the sectional time limits put into place this year and the change announced well in advance, students have been given enough time to practise test papers based on the new format. So now, more students, who are comfortable with this new format have applied as it gives them a chance to balance out all the sections, something that the IIMs are looking for," says Chitale.

APPLICANTS' PROFILE

Of the total number of registered candidates, 73% are male and 27% are female candidates

The ratio of admissions to CAT applicants was 1:153 in 2008 and 1:125 in 2009. The ratio of students getting into US Ivy League colleges was 1:10

The cities in which the highest numbers of candidates have been scheduled to take the test are New Delhi, Bangalore, Mumbai, Hyderabad and Pune

With 3000 seats on offer and 2.05 lakh candidates, about one in 80 candidates will make it to the 13 IIMs this year

CAT DATES

The Common Admissions Test (CAT), a computer-based test for admission to the Indian Institutes of Management (IIMs) and 150 other business schools in the country, is slated to be held from October 22 to November 18 this year

SKEWED SEX RATIO AMONG APPLICANTS

The CAT seems to be a test dominated by the men, with close to 1.50 lakh male aspirants registered with just 27% women. "The reason for the difference could be that a majority of CAT applicants are engineering students and engineering colleges have a similar skewed sex ratio. Since such a large number of men apply for the CAT, it is natural that a similar ratio of them will get into the institutes," says Parag Chitale, director, CPLC

Cracking it verbally

With the CAT just around the corner, here are some basic preparation tips

With the Indian Institutes of Management's CAT just around the corner, you can base your final verbal preparation on two basic premises:

- An accuracy of 75% is good (really good in fact!)
- It is always more the merrier; so, try and solve all the questions.

CAT has traditionally been a Reading Comprehension (RC)-centric paper. Hence, this the pivotal area for ensuring success in the verbal portion. The number of passages varies from three to four, with three or four questions per passage. There are a few critical factors in RC preparation. Here are some tips:

- Ideally, don't take more than eight to ten minutes per passage and ensure that all passages are looked at with the additional rider that all verbal ability and reasoning questions have to be attempted.
- The key to preparation is reading on diverse topics. Various websites like www.magportal.com give theme-based articles to read and will help build up your repertoire.
- Target all direct questions followed by partially inferential questions. Questions with the 'except' clause or with lengthy answer choices should be avoided as they tend to be quite difficult.

Verbal ability

This section includes grammar and word-based questions. For grammar-based questions, form a template for common areas such as nouns, verbs (tenses), prepositions, articles, etc.

Read up on diverse topics, go to www.magportal.com for tips

- In the case of word-based questions, spend 30 minutes regularly on going through a list of the most commonly-misused words such as homophones. The root-prefix-suffix method for word learning can help solve the 'fill in the blank' questions.

Verbal reasoning

This includes parajumbles and paragraph completion questions. Here's what will help:

- Identify the introductory statement, which will give you a gist of the paragraph.
- Then identify links that will connect the two sentences. These connectives can be conjunctions (but, and, etc) or can be content connectives like cause-effect, generic to specific, etc.

Critical reasoning

This year's CAT is likely to have questions from the critical reasoning section. These are questions which typically appear in the Graduate Management Admission Test (GMAT) and have also been asked intermittently in the CAT. These involve:

- Strengthening and weakening an argument
- Identifying flaws in the argument
- Identifying logical fallacies
- There are no shortcuts to learning a language and practice is the key to success. Spend at least an hour on regular reading and 30 minutes solving passages from various online sources. The same is applicable to vocabulary and reasoning-based questions.
- While solving problems, give priority to the time allocated to the verbal and RC areas. If there are an equal number of RC and verbal questions, then the rule of thumb is to allocate time in the ratio of 2:1 (if you allocate 30 minutes for RC, then keep 15 for verbal).

Hindustan Times, ND
19/10/2011
P-3

Discussing CAT paper can land you behind bars

Shaswati Das
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NEW DELHI: Discussing your Common Admission Test (CAT) questions can land you behind bars. Students appearing for CAT this year will have to weigh very carefully what they talk outside the examination hall as any discussion on the day's question paper will not only result in imprisonment, but a heavy fine of up to ₹2 lakh.

"If any candidate discloses, publishes, reproduces, transmits, stores, or facilitates transmission and storage of the contents of the CAT in any form or by any means, they shall be violating the Indian Contract Act, 1872 and/or the Copyright Act, 1957 and/or the Information Technology Act, 2000. Such actions may constitute a cognisable offence punishable with imprisonment for up to three years and fine up to ₹2 lakh," said Janaki Raman Moorthy, Convenor of CAT 2011.

"There is secrecy only in terms of the test content which is important for protecting IIMs' intellectual property. We will take the necessary measures to monitor these disclosures," added Moorthy.

Those taking CAT will have to agree to a Non-Disclosure Agreement (NDA) at the time of the test, which prohibits them from disclosing or discussing any test content after the exam. While the NDA was brought into effect in 2009, it was found that several students violated it.

NEARLY 2.05 LAKH STUDENTS WILL APPEAR FOR CAT THIS YEAR. THE QUESTION IS, HOW WILL THE IIMs MONITOR THESE DISCUSSIONS ACROSS THE COUNTRY.

Nearly 2.05 lakh students will be appearing for the test this year. The question that arises is, how will the IIMs monitor these discussions across the country.

Also, following the Supreme Court's (SC) judgment, which states that examination answer sheets must be made public under the Right to Information (RTI) Act, this move by the IIMs is likely to be challenged by the public.

"The IIMs' decision may be seen as a conflict to that judgment. So enforcement of the NDA can be difficult here. If they attempt a mass prosecution of students, it will most likely be challenged," said Sumathi Chandrsekharan, a lawyer.

Hindustan Times, ND
19/10/2011
P-6 HT Education

OZ TO ACCEPT PTE ACADEMIC SCORES

HT Education Correspondent

Pearson has announced that the Australian Department of Immigration and Citizenship (DIAC) will soon accept Pearson Test of English Academic scores submitted with student visa applications, following the formal approval of the test in May this year. PTE Academic scores are likely to be accepted from November 5, 2011.

DIAC will require students to achieve minimum PTE Academic scores ranging between 29 and 50 at Assessment Levels 3 and 4, depending on their nationality, education sector and the terms of their study in Australia.

PTE Academic is already accepted by more than 150 institutions in Australia which ask for proof of English language proficiency as part of their admissions criteria for international applicants. The test is accepted by more than 2800 academic programmes worldwide and is already approved by a number of government agencies including the UK Border Agency, which accepts the test for Tiers 1, 2 and 4 (student) visa applications. It is expected that the demand for PTE Academic will increase further once DIAC starts accepting scores. Pearson has responded to this by creating additional session availability in countries such as China, India, and Nepal.

Hindustan Times, ND
19/10/2011
P-1HT Education

7 in Ielts = 94 in Toefl

Oz to accept equivalent scores for visas

After approving the Toefl for student visas in May 2011, Australia has now accepted the test score equivalencies identified by ETS research for the test when compared to International English Language Testing System (Ielts) scores. The new score equivalencies are likely come into effect on November 5, 2011. The Department of Immigration and Citizenship will also accept Pearson Test of English (PTE) Academic scores submitted with student visa applications.

Toefl iBT score	IELTS band
46	5.5
60	6.0
79	6.5
94	7.0
102	7.5
110	8.0
115	8.5
118	9.0

Also see page 6

STATESMAN ND 19/10/2011 p-10

Membrane function & the impact of molecular biology

Studies reveal that cells in the human body need more than 30 families of membrane proteins to facilitate transportation of the great variety of solutes that must be moved across membranes.

tapan kumar maitra elaborates

BIOLOGICAL membranes play five related yet distinct roles: they define the boundaries of the cell and delineate its compartments; serve as loci of specific functions; possess transport proteins that facilitate and regulate the movement of substances into and out of the cell and its compartments; contain the receptors required for the detection of external signals; and provide mechanisms for cell-to-cell communication.

One of the most obvious functions of membranes is to define the boundaries of the cell and its compartments and serve as permeability barriers. The interior of the cell must be physically separated from the surrounding environment not only to keep desirable substances in but also to keep undesirable substances out. Membranes serve this purpose well because their hydrophobic interior is an effective permeability barrier for hydrophilic molecules and ions. The permeability barrier for the cell as a whole is the plasma (or cell) membrane — surrounding the cell and regulating the passage of materials both into and out of cells. In addition to the plasma membrane, various intracellular membranes serve to compartmentalise functions within *eukaryotic* cells.

Membranes have specific associated functions because the molecules and structures responsible for those functions — proteins, in most cases — are either embedded in or localised on them. One of the most useful ways to characterise a specific membrane, in fact, is to describe the particular enzymes, transport proteins, receptors and other molecules associated with it.

For example, many distinctive enzymes are present in or on the membranes of organelles such as the *mitochondrion, chloroplast, endoplasmic reticulum* (ER), *Golgi complex, lysosome* and *peroxisome*. Such enzymes are often useful as markers during the isolation of organelles from suspensions of disrupted cells. For example, *glucose phosphatase* is a membrane-bound enzyme found in the ER. When ER membranes are isolated and purified (as tiny vesicles called *microsontes*), glucose phosphatase can be used as a marker enzyme, enabling the investigator to determine the distribution of microsomes among the various fractions. Marker enzymes for other organelles can then be used to assess the degree to which it is free from contamination by these other markers.

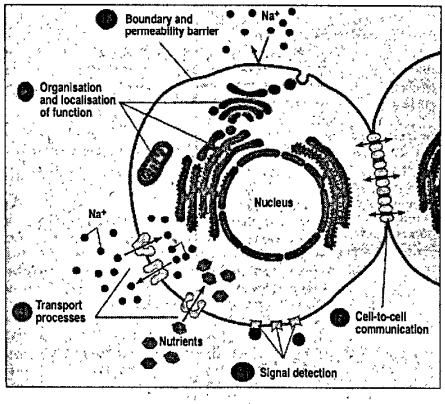
Another function of membrane proteins is to carry out and regulate the transport of substances into and out of cells and their organelles. Nutrients, ions, gases, water and other substances are taken up into various compartments and various products and wastes must be removed.

The modes of transport differ. Many substances move in the direction dictated by their concentration gradients. A molecule that has no net charge moves in the direction dictated by its concentration gradient across the membrane. The movement of an ion, on the other hand, is determined by its electrochemical potential, which is the sum of its concentration gradient and the charge gradient across the membrane. This process, which does not require energy because movement is "down" the gradient, occurs via two different modes. Some molecules such as water, oxygen and ethanol can cross membranes by simple diffusion. Larger, more polar molecules such as sugars and amino acids move across membranes aided by specific transport proteins, a process called *facilitated diffusion*.

Alternatively, a substance can be transported against its concentration gradient if it is uncharged or against its electrochemical potential, in the case of an ion. This is an energy-requiring process called *active transport*. Solutes such as sugars and amino acid are often present in low concentrations outside the cell and are transported inward against their respective concentration or electrochemical gradients. The energy needed to drive such "uphill" transport is typically provided by the hydrolysis of ATP or a similar high-energy compound and the process is called *direct active transport*. Alternatively, the needed energy can be provided by coupling the "uphill" transport of the solute to the "downhill" transport of sodium ions or protons across the same membrane, a process that is called *indirect active transport*. The driving force for the "downhill" movement of the sodium ions or protons is their electrochemical potential, which depends on the prevailing charge gradient and the concentration gradient of the ion across the membrane.

Even molecules as large as proteins can be transported across membranes. In some cases, intracellular vesicles facilitate the movement of such molecules either into the cell (endocytosis) or out of the cell (exocytosis). In other cases, proteins that are synthesised on the ER or in the cytosol can be imported into specific membrane-bound organelles such as *lysosomes, peroxi-somes* or *mitochondria*.

Cells receive information from their environment, usually in the form of electrical or chemical signals that impinge on their outer surface. The nerve impulses being sent from your eyes to your brain as you read these words are examples of such signals, as are the various hormones present in your circulatory system. *Signal transduction* is the term used to describe both the detection of specific signals at the outer surface of cells and the specific mechanisms used to transmit such signals to the cell interior.



In the case of chemical signal transduction, some signal molecules enter directly into cells and act internally. The hormone *estrogen* is an example. Because estrogen is a steroid, it is nonpolar and can therefore cross membranes readily. As a result, estrogen enters its target cells and interacts with regulatory proteins within. In most cases, however, the impinging signal molecules do not enter the cell but instead bind to specific proteins called receptors on the outer surface of the plasma membrane.

Binding of such substances, called *ligands*, is followed by specific chemical events on the inner surface of the membrane, thereby generating internal signals called *second messengers*. Membrane receptors therefore allow cells to recognise, transmit and respond to a variety of specific chemical signals. Membrane proteins also mediate adhesion and communication between adjacent cells. This intercellular communication is provided by gap junctions in animal cells and by *plasmodesmata* in plant cells.

Membrane proteins mediate a remarkable variety of cellular functions and are therefore of great interest to cell biologists. Only within recent years, however, has the study of these proteins begun to yield definitive insights and answers. Some of these answers have come from the application of biochemical techniques to membrane proteins.

Several such applications include SDS-polyacrylamide gel electrophoresis, hydropathy analysis and other procedures for labelling membrane proteins with radioactivity or fluorescent antibodies. Two other biochemical approaches that can be used to study membrane proteins are affinity labelling and membrane reconstitution.

Affinity labelling utilises radioactive molecules that bind to specific membrane proteins because of known functions of the proteins. For example, a compound called *cytochalasin B* is known to be a potent inhibitor of glucose transport. Membranes that have been exposed to radioactive cytochalasin B are, therefore, likely to contain radioactivity bound specifically to the protein(s) involved in glucose transport.

Membrane reconstitution involves the formation of artificial membranes from specific purified components. In this approach, proteins are extracted from membranes with detergent solutions and separated into their individual protein components. The purified proteins are then mixed together with *phospholipids* under conditions known to promote the formation of membrane vesicles called *liposomes*. These reconstituted vesicles can then be tested for their ability to carry out specific functions that are known, or thought to be mediated by membrane proteins.

In spite of some success with these and similar approaches, membrane biologists have often found themselves stymied in their attempts to isolate, purify and study membrane proteins. Biochemical techniques that work well with soluble proteins are not often useful with proteins that are hydrophobic. Within the past three decades, however, the study of membrane proteins has been revolutionised by the techniques of molecular biology, especially DNA sequencing and recombinant DNA technology.

Vital to these approaches is the isolation of a gene, or at least a fragment of a gene, that encodes a specific membrane protein. With a DNA molecule in hand, the first priority of the molecular biologist is almost always to determine its nucleotide sequence.

DNA sequencing is in fact one of the triumphs of molecular biology; it is now far easier to determine the nucleotide sequence of a DNA molecule than to determine the amino acid sequence of the protein for which it codes. Moreover, most of the sequencing procedure is carried out quickly and automatically by DNA sequencing machines. Once the DNA for a particular protein has been sequenced, the putative, or predicted, amino acid sequence of the protein can be deduced using the genetic code that equates every possible sequence of three nucleotides with a particular amino acid. The amino acid sequense can then be subjected to hydropathy analysis to identify likely transmembrane segments of the protein.

Knowing the amino acid sequence of the protein also allows the investigator to prepare synthetic peptides that correspond to specific segments of the protein.

The writer is associate professor and head, Department of Botany, Ananda Mohan College, Kolkata

Hindustan Times, ND 19/10/2011 P-1 HT Education

Learn in the USA

With a surge in the number of Indian students in the last few years, American institutions are also trying to reach out to them in a big way

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Like several students across the globe, 20-year-old Rhea Munjal dreamt of going to the US for higher studies. Her dream turned into reality when she enrolled at Ohio State University (OSU) this year.

"I am pursuing a master's in law at OSU. There are 10 students from other countries at Ohio and I'm the only Indian. I thought of heading to the US for further studies as it is home to some of the best institutions in the world," she says.

Munjal is among the surging number of students heading to the US in pursuit of a qualification from an American institution. In 2010, Indian students constituted the second largest group of foreign students studying in the US, with nearly 1.05 lakh students.

Besides the popular universities such as Columbia, Harvard, Princeton, and Stanford, there are several others that offer great scope to foreign students.

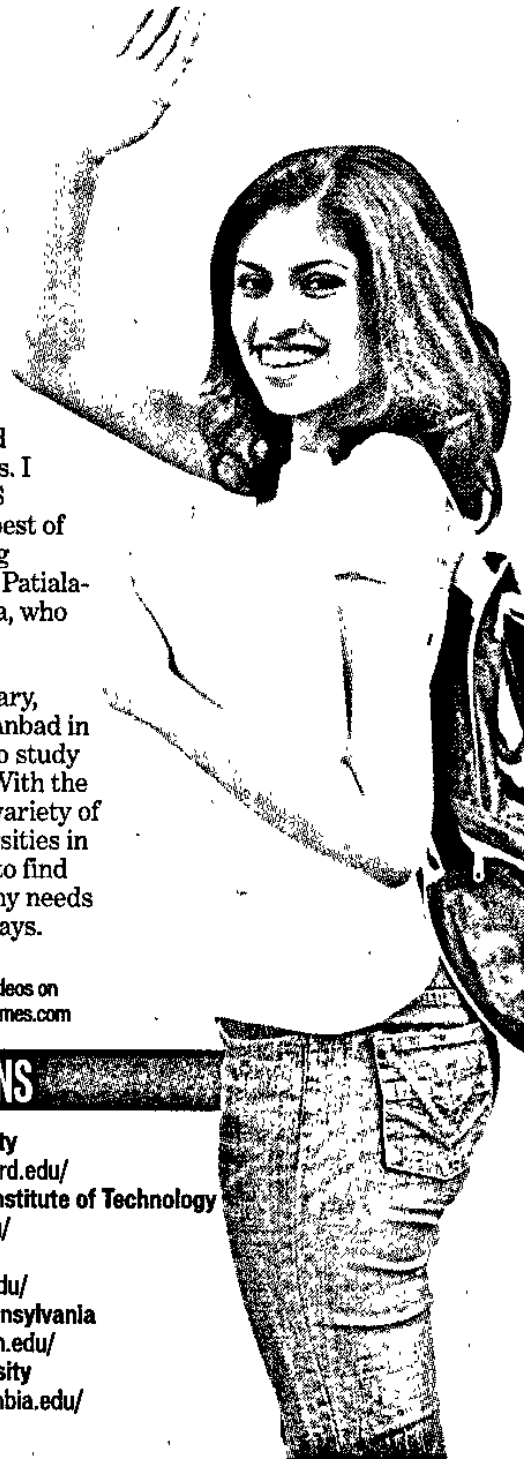
The US, with more than 4,000 accredited institutions of higher learning, offers access to high quality education to students in a broad range of fields. Thirteen of the US institutions have been ranked in the top 20 of the recently-released QS World University rankings.

American institutions are also trying to reach out to Indian students through education fairs and other events. Recently, officials from 21 institutions from more than 15 states in the US, visited India to interact with prospective students as part of the US Department of Commerce US Education Mission to India.

These included officials from the Arizona State University, West Virginia University and University of Pennsylvania. Students were upbeat after learning about the new study options.

"I want to pursue a master's or a PhD in biological sciences for which I have zeroed in on the University of Pennsylvania and University of Illinois. I plan to go to the US because it has the best of faculty and teaching methodology," says Patiala-based Madhu Smita, who holds a master's in biotechnology.

Sankalp Choudhary, who hails from Dhanbad in Jharkhand, plans to study for a law degree. "With the large number and variety of colleges and universities in the US, I'm trying to find one that matches my needs and interests," he says.



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Hindustan Times, ND 19/10/2011
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What America needs

The final part of an analysis on how USA can woo students

Rahul Choudaha

While the US economy struggles to revive, it may be time for America to redouble its efforts to attract international students. There are three main reasons why.

First, the tightening of visa requirements by Australia and the UK is making them less attractive destinations for students as they see lower prospects for future jobs and immigration. Second, budget cuts in US public institutions are prompting them to recruit international students more actively as an additional source of revenue.

Finally, even the US government is getting more serious about attracting international students, as seen by the latest website launched by the Department of Homeland Security to provide information to international students.

Some of the early reports for autumn 2011 show a significant increase in international student enrollment at US universities.

For example, at the University of Iowa first-time freshmen international student enrolment reached record levels of 484 this year, compared to 388 last year. Likewise, at Arkansas State University international student enrollment for autumn 2011 passed 1,000 students for the first time. Last year 780 international students enrolled.

The number of internationally mobile students grew by 1.6 million between 2000 and 2009, according to the OECD.

This trend will continue to be driven by the increasing ability of prospective students in countries like China and India to afford foreign higher education. At the same time, their local higher education systems are expanding at a fast rate, but at the expense of quality. This will result in a large number of quality-hungry students who have an ability to pay for their higher education.

Continued on page 6

Continued from page 1

What America needs

However, a complex interplay of variables will make it difficult to predict where this growth will go.

As we have seen, the influence of unpredictable events like 9/11 and the recession on student mobility is far-reaching and global. In addition, government policies related to visa requirements, specifically those concerning financial requirements and post-education work opportunities, will have a big influence on student mobility.

Competitive pressures will also help alternative models of student recruitment like agents and pathways programmes to grow.

However, the adoption of these models will not be without risks, pitfalls and conflict. For example, the agent model continues to raise questions about the integrity of admissions processes, especially with relation to document fraud.

It is ironic that the agency model, which facilitated numerous visa frauds in Australia and the UK and prompted their governments to act to restrict student mobility, is now being viewed positively in the US. These models will certainly help to increase student mobility, but they will bring greater risk for institutions and nations.

International student mobility is a source of enrichment and advancement for institutions, students and nations. The future outlook looks positive for increased numbers of international students, but competition will also become fierce, which will make the picture less predictable.

Institutions and nations that can adapt to the changing environment will be best placed to make the most of the opportunities and uncertainties involved.

The author is director of development and innovation at World Education Services in New York, a non-profit organisation. The views expressed by the author in this article are personal

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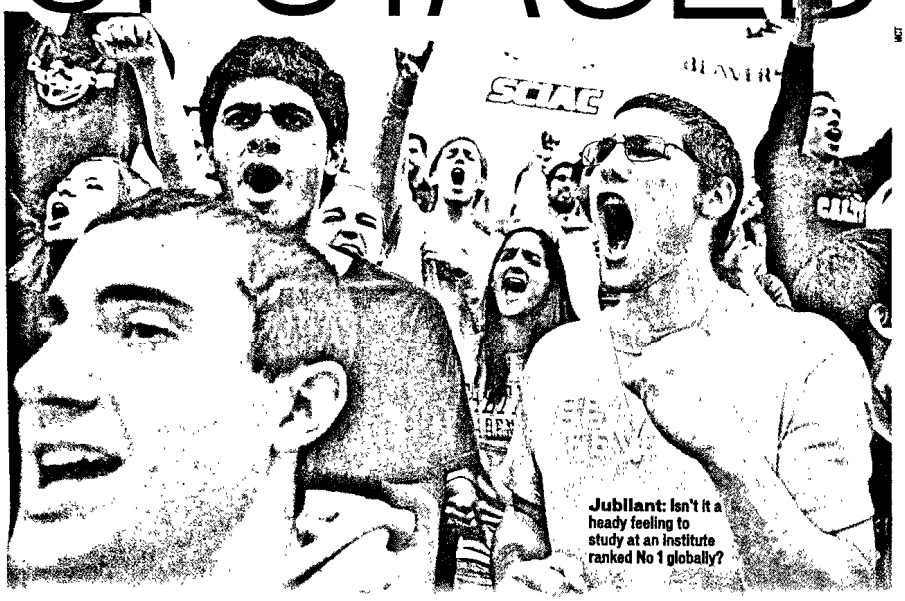
UPSTAGED



Jubilant: Isn't it a heady feeling to study at an institute ranked No 1 globally?

Caltech has ended the eight-year reign of the big brand Harvard

Rahat Bano
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The relatively 'smaller' institution in a California city has ended the eight-year reign of the big-brand Harvard University in the recently released 2011-2012 Times Higher Education (THE) World University ranking.

(Stanford University is tied with Harvard at #2 among the 400 institutions worldwide).

Pasadena-based California Institute of Technology, or simply Caltech, climbed to the top slot with a total score of 94.8 as against Harvard's 93.9. In last year's THE ranking, the topper Harvard garnered 96.1 and Caltech, at #2, 96 - a gap of just 0.1.

The THE ranking is based on 13 performance indicators, grouped into five heads: teaching - the learning environment (carrying 30% of the institution's combined ranking score); research -volume, income and reputation (30%), citations - research influence (30%), industry income - innovation (2.5%) and international outlook - staff, students and research (7.5%).

"This year, Caltech pips Harvard with marginally better scores for 'research - volume, income and reputation', research influence (measured by paper citations) and (most substantially) the income it attracts from industry. Harvard just beats Caltech for the quality of its teaching environment," Phil Baty, editor, Times Higher Education World University Rankings, wrote in his analysis on the THE website. "With differentials so slight, a simple factor plays a decisive role in determining the rank order: money."

On the teaching score, Harvard bagged 95.8 and Caltech, 95.7. While the 1636-born Harvard is more renowned for law, Caltech's forte is pure sciences and technology. Though it has an enrolment of just 2175 (first term 2010) students, its solid CV features, among other distinguishing accolades, 32 Nobel prizes (Harvard: 44). Started in 1891, it is home to discoveries and inventions such as the Richter scale (used to measure earthquakes), left brain/right brain (that the brain's two halves have different capabilities), the nature of the chemical bond and the recommended daily adult requirement of Vitamins A, B, C and D.

An Indian student couldn't seem to stop raving about it. "I did my master's from the Indian Institute of Technology at Kanpur and received my doctoral degree from the Tata Institute of Fundamental Research, in India. Living with world-renowned scientists and celebrated personalities, hence, was not something new for me. But, working at the topmost institute in the world, sharing waves with many Nobel laureates, still made me nervous," says Nikhil J Joshi, who joined Caltech's biology / computation and neural systems division as postdoctoral fellow about seven months ago.

"I am completely overwhelmed by the dedication and honesty (of the student) towards good science, and ample positive attitude and confidence in finding solutions, irrespective of the toughness of the problem. You might know that Caltech works purely via trusting an honour code and very little by imposed vigilance. It helps develop a fresh, friendly and comfortable, but sincere atmosphere. Here in my lab, we like challenging each other, querying about each thought or concept. And, that's the way we all co-evolve healthy!"

"It makes me immensely proud to be at THE best institute, at the rise of one's

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career, like mine. I chose to be at Caltech, even before it was announced number one, because we all knew it is far beyond standards... During my PhD, I have worked with an international collaboration in Japan and have also spent time in ETH Zürich (a top-ranked school). But Caltech is a completely different experience. Despite being very strong in academics and research, I have always experienced a very lively atmosphere and during scientific studies and discussions, it hardly matters whether one is a graduate student, a post doctoral fellow, a professor or a Nobel laureate," adds Joshi.

Another student gave a measured reaction. "Rankings should always be taken with a pinch of salt," said Utkarsh Mital, pursuing a PhD in applied mechanics there. He's a civil engineer from VJTI, Mumbai.

"It's always great to see your school ranked at the top, but these are subjective perceptions. What's more important for me personally is how well my school is doing in my area of research." His experience at the institute "so far has been mind-numbing to say the least. I have learnt a lot over the past one year and met some great minds. Life here can get demanding, but that's a process you must go through to be worthy of a Caltech degree."

नवभारत टाइम्स
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गर्लफ्रेंड के इनकार पर आईआईटियन ने दी जान

19 Oct 2011, 0400 hrs IST, नवभारत टाइम्स

बस॥ गोविंदपुरी

कालकाजी स्थित गोविंदपुरी में सोमवार रात 25 साल के एक युवक ने पंखे से लटकर आत्महत्या कर ली। युवक की पहचान अमित सिंह के रूप में हुई है। जो आईआईटी दिल्ली से बीटेक कर चुका था और सिविल सर्विसेज की तैयारी कर रहा था।

पुलिस के मुताबिक मृतक आगरा का रहने वाला था। पुलिस के मुताबिक गर्लफ्रेंड ने शादी से इनकार किया तो वह डिप्रेशन में चला गया था। पुलिस को घटनास्थल से एक सूइसाइड नोट बरामद हुआ। पुलिस सूत्रों ने बताया कि अमित आगरा से दिल्ली आकर यहां गली नंबर 4 में किराए के कमरे में रहता था। आईआईटी दिल्ली से 2008 में बीटेक करने के बाद वह साल भर पहले आईएएस की तैयारी में जुट गया। उसने मुखर्जी नगर में करीब एक साल पहले कोचिंग लेनी शुरू कर दी। यहां उसके पहचान एक लड़की से हुई। देखते ही देखते दोस्ती रिलेशनशिप में बदल गई। पुलिस ने बताया कि लड़की ने अमित के सामने शर्त रखी कि अगर वह कुछ बन जाएगा तो वह उससे शादी कर लेगी। कुछ दिन पहले एक कंपीटीटिव एग्जाम के दूसरे राउंड का अमित के पास कॉल आया। पुलिस के मुताबिक अमित ने जब अपनी गर्लफ्रेंड को इस बारे में बताकर शादी का प्रस्ताव रखा तो उसने कहा कि वह किसी और से रिलेशनशिप में है। इसके बाद अमित ने आत्महत्या कर ली।