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FALL 2004:
WHAT HAS
AMSA BEEN
UP TO?

- **Eyeglasses Drive**
- **Vision Screening Day**
- **Walk for Breast Cancer**
- **UHF Book Drive**
- **AIDS Week**
- **"Curious Minds" Seminar**
- **Pre-med Buddy Program**
- **Med Student Buddy Program**

The Pulse

ISSUE 2

DECEMBER 2004

Unite for Sight by Rupa Krishnaswamy

Unite for Sight is an international, non-profit organization whose motto is to empower communities worldwide, to improve eye health, and eliminate preventable blindness. In an effort to realize our goals, we collect/donate eyeglasses and organize free vision screenings. Our most important task is to stress proper eye care, as well as to educate patients. Whether they have 20/20 vision or have trouble seeing clearly, each patient is examined, educated, and referred to a free clinic if need be.

During Unite for Sight's last vision screening, I had the opportunity to examine a few patients. After being

trained by NYU medical students, the undergraduate volunteers and I were able to perform tests for visual acuity,



pupillary reflexes, and peripheral vision. While promoting the vision screening in Washington Square Park, I came across a gentleman whose vision was getting worse each day; his sight was so poor that he almost had a fatal accident on the highway. I brought him to the screening, and after a

brief examination, he was immediately referred to a free clinic for treatment. Although we had to give him the bad news that he needed further treatment, he was so grateful and optimistic.

The opportunity to provide people with basic, yet essential eye care and education, and knowing that it is making a significant impact in their daily lives is a great feeling. If you are interested in becoming a member of Unite for Sight and participating in vision screenings or eyeglasses drives, please email Rupa at rrk209@nyu.edu. For more information about Unite for Sight, please visit www.uniteforsight.org.

Volunteer Update: Walk for Breast Cancer by Rishi Vohra

This year's annual Making Strides Breast Cancer was a huge success, and not only because of the contributions that were received, but also because of the volunteers! AMSA was an integral

part of the effort at the walk on October 17th. In two shifts, AMSA members manned tents to prepare "thank-you" bags filled with nutritious health bars and drinks for the walkers. AMSA members

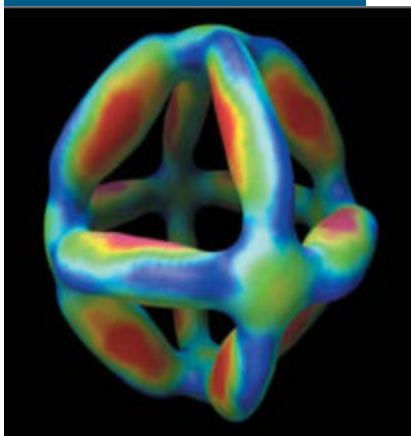
were also called upon to cheer the weary walkers as they made their way towards the finish line. It was an amazing experience for AMSA and we are likely to participate in such an event again in the future.

“Nanotechnology and The Double Helix” by Nadrian C. Seeman

“The year 2003 witnessed the 50th anniversary of the discovery of DNA’s double-helix structure by James D. Watson and Francis H. Crick. Their discovery reduced genetics to chemistry and laid the foundations for the next half a century of biology. Today thousands of researchers are hard at work deciphering the myriad ways that genes control the development and functioning of organisms. All those genes are written in the medium that is DNA.

Yet this extraordinary molecule has other uses in addition to those of biochemistry. By employing the techniques of modern biotechnology, we can make long DNA molecules with a sequence of building blocks chosen at will. That ability opens the door to new paths not taken by nature when life evolved. In 1994, for example, Leonard M. Adelman of USC demonstrated how DNA can be used as a computational device. In this article I will discuss another nonbiological use of DNA: the building of structures and devices whose essential elements and mechanisms range from around one to 100 nm in size—in a word, nanotechnology.”

To read the whole article, see *SCIENTIFIC AMERICAN* June 2004



DNA OCTAHEDRON shown here was built out of one long strand of DNA and five short “helper” strands. Each strut consists of two parallel, interlinked double helices.

Fine Arts on the Nanoscale? By Alap Butala

In many ways, the fundamental natural sciences aim to unify our current knowledge of various disciplines. Nonetheless, the ties between fine arts and science have been relatively nonexistent in recent years. Surprisingly, the field of x-ray crystallography, or chemical photography on the micro-scale, has blurred the division between these two realms in a fascinating way.

Nadrian C. Seeman of N.Y.U., an x-ray crystallographer, had an epiphany with regard to the construction of genetic architecture incited by his reflection on M.C. Escher’s woodcut *Depths*. Interestingly enough, this took place in

1980, two years before Seeman learned the mechanics of genetic engineering. “A CRUCIAL GOAL for nanotechnology based on DNA is to extend the successes in two dimensions TO THREE DIMENSIONS.” Seeman envisioned a novel three dimensional lattice which he believed would have many positive ramifications which was structurally similar to the school of fish in Escher’s piece. These three dimensional DNA structures could prove to contain novel properties, or unforeseen combinations of properties. Furthermore, with the use of DX/JX switches designed by Seeman and Weiqiong Sun, Zhiyong Shen, Mao at NYU, nano-

electronic memory devices may provide the stepping stones to the advent of micro-scale machinery. One such application that has since been realized is a bar code on the nano-scale. Using PX/JX (0 and 1 respectively) DNA switches, Seeman et. al. have laid the foundation for plausible genetic machinery. Of utmost interest to Seeman was of course the crystallographic importance of these macromolecules. The potentiality of precisely caging a globular molecule in a three dimensional array of double helical DNA so as to crystallize with relative ease would greatly increase the rate of discovery with regard to molecular biology and biochemistry.

Recently, there has been an upsurge of artistic interest in 3-D DNA structures. Many crystallographers sell pictures of unique DNA structures which have little or no practical applications. However, while working with our own

organic chemistry professor James W. Canary and Philip S. Lukeman of N.Y.U., Seeman created a truncated octahedron which may potentially provide the framework for a micro-scale machine with myriad uses. Thus, it is apparent that the diligence and toil of thousands of scientists and intellectuals in the past century was not merely a fruitless scientific revolution, but a cultural dynamic which may be the strongest unifying force in modern society. Many times the tedious life of a student amidst the chaos of New York City causes one to lose sight of the big picture. Yet, the occasional brilliance of one individual in perceiving age old data in a new-found manner may well result in a breakthrough of vast significance. With good fortune, this juxtaposition of distinct philosophies has now resulted in a unifying dynamic which is worthy of further consideration.



Let us know what you think! Have questions, suggestions, or interesting ideas for The Pulse?

E-mail your thoughts to *mab359@nyu.edu*, and you may be published in the next issue!

**We're on the web!
www.nyu.edu/clubs/amsa**

#1 TIP:

SLEEP.

Don't
end up
like this
guy.

Get a
good
night's
rest!

Feeling **STRESSED?**

Follow these study tips for finals!

General Chemistry

- Know the periodic trends
- Be aware of algebraic shortcuts used to simplify dimensional analyses
- Look to past exams for emphasized topics
- Do all the practice **PROBLEMS** you possibly can!
- Don't just memorize problems—make sure you understand them so you can re-apply the theories to similar questions.

General Biology

- You cannot know everything — concentrate on the topics presented in class.
- Having many lecturers may seem confusing and overwhelming, but do not be afraid to contact them if you have questions!
- Be familiar with each lecturer's style of asking questions, it can be very handy.
- There is a lot of information — make outlines of general topics (ex: Microbiology or Evolution) to structure your studying.
- It is easy to get lost in details, try to keep the "**BIG PICTURE**" in mind!

Organic Chemistry

- Do all the assigned problems (and extra if you like) — even if you get them all wrong, understand why!
- Do not just memorize the same problem, review the material and be able to reapply it!
- Be aware of favored reactions.
- Expect indirect testing of the material, you'll most likely see various concepts playing into one problem — consider everything you've learned, and stick to your intuition!
- **PRACTICE, PRACTICE, PRACTICE.**

General Physics

- The reading questions at the end of each section are a great way to learn theory, while touchtone examples are great for application.
- Many topics in physics can be compared to real life situations, so make sure your answers **MAKE SENSE**.
- Pace yourself so you can attempt every question on the test.
- Pay close attention to units—it will appear on the test!
- It is a good idea to look at all the practice problems assigned, but questions that are lengthy and difficult will not appear on the tests which are cover mostly fundamental topics.

**Need a pickup? Take a BREAK! Join us for
caffeine and snacks to re-energize.**

Reading Day
DECEMBER 15
4-6 p.m.
Silver 711



Interviewing Strategies: A few words of advice

Medical school interviews can be scary and stressful! Read about some experiences of your fellow students who have just finished interviewing:

- “The beauty of the interviewing process is that each interview is different and there is no definitive way to prepare. Just be true to what you believe.”
- “I had one interviewer who was very defensive—his first question was ‘Why the hell do you want to go here?’ So know why!”
- “I treated the interview process as an opportunity to see new places and meet really interesting people. If you are committed to becoming a good doctor, than just be yourself and show the interviewer that you would be a pleasure to work with. The best interviewer focuses not on your grades and scores, but on what your passions are about.”
- “One interviewer asked me what makes me special. I didn’t want to sound egotistical, but I did not want to sound like a plain Jane either! There’s a fine line between being self-confident and overbearing.”
- **“Remember to wear comfortable shoes.”**
- “If you want to be as prepared as possible, I suggest you read the website of the school, review your AMCAS application, review related research that might pertain to what you are doing, stay current with health care issues, and most importantly, read the comments for the school you are applying to on the Student Doctor Network website: <http://www.studentdoctor.net/interview/index.asp>”
- “A challenging, yet interesting, question I was asked: What is an ideal physician?”
- “If a school invites you to an interview, they already know you have the brains to do the work. Now you just have to show them you have the heart to be a good doctor.”