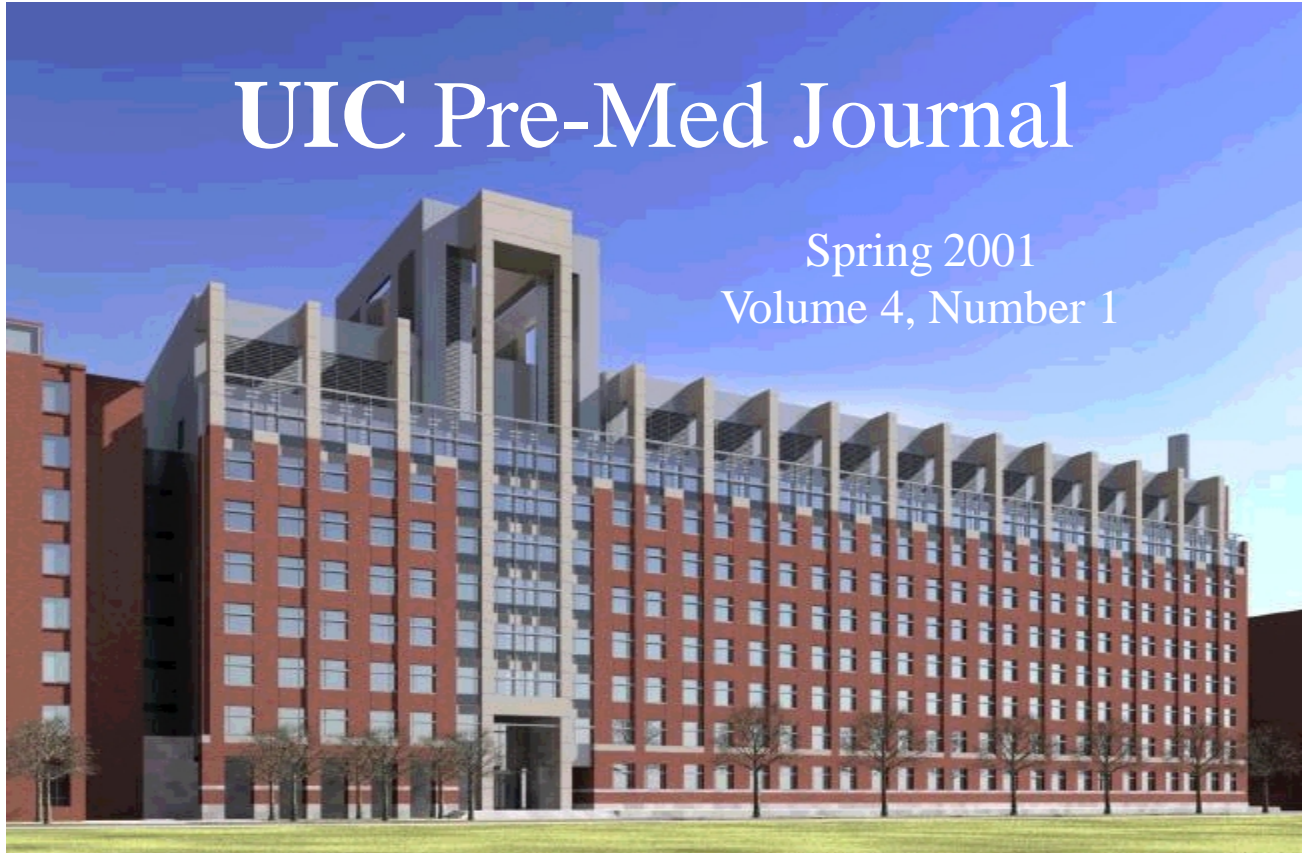


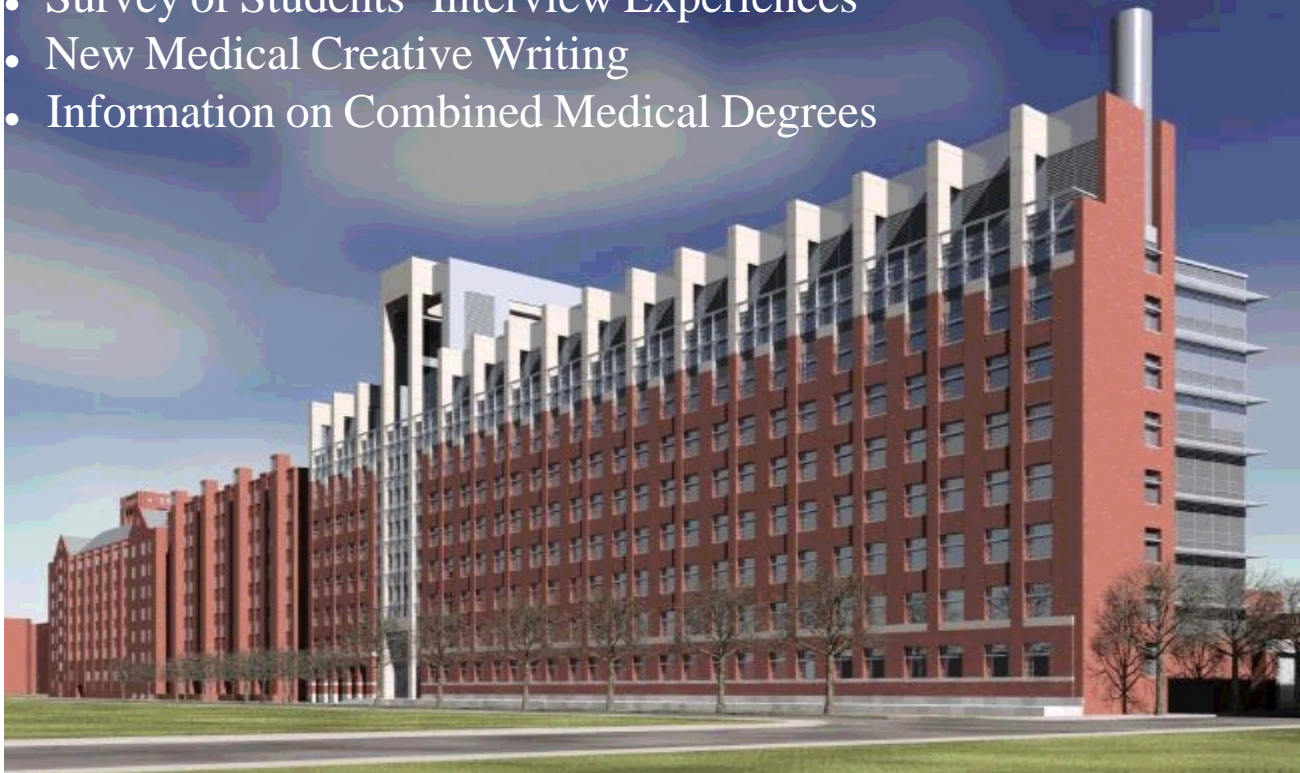
# UIC Pre-Med Journal

Spring 2001  
Volume 4, Number 1



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- New Medical Creative Writing
- Information on Combined Medical Degrees



Two views of the prospective UIC Medical Research Building  
[www2.uic.edu/orgs/premedj](http://www2.uic.edu/orgs/premedj)

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# About this Issue....

**George Nijmeh and Monica Oberoi**

## ***Editors-In-Chief***

The Spring 2001 issue of the Pre-Med Journal has one new feature: a creative medical writing section. This Literary Section allows students to reflect and express their medical related experiences in a creative way. The Journal would sincerely like to thank *Body Electric*, the literary section of the UIC medical school, for its contribution to this section.

In addition, the journal would like to express its gratitude to Dr. Arnold Kaplan (Professor of Biological Sciences), Beth Powers (Director, Special Scholarship Programs), Dr. Tim Murphy (Professor of Philosophy in Biomedical Sciences), and Suzanne Poirier (Professor of Literature and Medical Education) for their help in reviewing the journal's content before publication.

This issue of the journal has attempted to cover a variety of subjects pertinent to pre-medical students. The features section provides insight into the medical school interview process. Read first-hand interview experiences about medical schools across the nation, including: Duke University, University of Chicago, Columbia University, Northwestern University, Indiana University, Washington University and the University of Illinois. Another major theme of this issue is combined degrees. Learn more about the MD/PhD, MD/MPH, and MD/MBA programs in the Pre-Med Exclusive and Research sections. The Research section also provides links about summer internships at sites across the nation.

Aside from articles specific to pre-medical students, the journal also provides general healthcare information. The News section discusses the effects of cell phones and sleep on human health. In addition, this section shows the advantages to eating certain foods. Believe it or not, chocolate and honey may actually be good for your health (in moderation of course)! The Invited Opinions section introduces another health care concern: xenotransplantation. Read convincing arguments in support and opposition of this usage of animal organs for human transplants.

As the last issue of the school year, the Spring 2001 Journal serves as a transitional stage. This issue is the final publication for over half the staff. Eight students will be graduating in May. Read about these staff member's reflections on their experiences with the Journal and their undergraduate careers at UIC. With over half the staff changing, the journal is sure to bring transformations in the upcoming school year. The Journal wishes the remaining staff members, who will be under the direction of the new Editors-in-Chief, Michelle Gentile and Jane Jih, the best of luck in the quest for continual improvement.

## **Disclaimer:**

The articles, editorials, and content do not necessarily represent the views of the University of Illinois at Chicago, the UIC Pre-Med Journal, the Editorial Staff, and other persons associated with the UIC Pre-Med Journal.

# Features

## Insight Into Medical School Interviews

Compiled by Amy Parecha



### NINAD SHAH

My interview at Northwestern University was my fourth interview, and probably my most interesting one. The day began with a short orientation. We started off by watching a short video about Northwestern. The video included information about NU's curriculum and students' perspectives

about life at NU. It was clear from the video that the spirit of cooperation is highly valued. An admission's dean, who provided us with some application statistics and an overview of our interview day, concluded the orientation.

The first interview was a short, informal interview with one of the admissions deans. It consisted of updating my file and also discussing a few points from my application. Near the end of this interview, the dean asked me if there was any message I would like for her to relay to the admissions committee. I truly appreciated this extra step the deans were taking. I felt they were giving every applicant a chance to share any pertinent information missing from their application.

After this interview, I was given 30 minutes to relax and prepare for the next interview (the main one). This interview consisted of a "panel interview," meaning that there were 3 interviewers and 3 interviewees present. My interview consisted of another male applicant, a female applicant, two male physicians, and a fourth year male medical student. The logic behind this unique style of interviewing is that the medical field is about working as a team and not as individuals. Northwestern, therefore, interviews students in "teams," to see not only the applicant's ability to communicate with the interviewer, but also the way the applicant interacts with the other interviewees.

The interview was conducted in a relaxed environment. Since the interviewers only knew our names and the college we attended, we began the closed-file interview with introductions. Once we introduced ourselves, the interviewers began to ask each of us questions. No question was intentionally meant to "stump" an applicant or embarrass him/her. I felt that the interviewers were simply trying to get to know each of us. In fact, by the end of the interview, the atmosphere had changed from that of an interview to that of six people relaxing and having a conversation. Overall, I ended up enjoying the "panel interview." It provided me with a glimpse of the group work that is so crucial to the medical field.

Next, we were given a coupon to eat lunch at Northwestern's new hospital. First year students then took us on a tour of the medical school, dorms, and hospital. NU's new state of the art hospital is the most impressive hospital I have ever seen. The attention to detail in the hospital was amazing -- it was geared to enhance the comfort of every patient. There are no paintings with animals, for example, because animal images are found to disturb patients coming out of anesthesia. After returning from the tour, we were given a financial aid speech. Before the day was over, all the interviewees reconvened in the admissions office, where we were provided with small snacks and one last chance to mingle with first year students.

After my NU interview, I walked away with a feeling of comfort and satisfaction with the school, something I did not experience after any other interview. Everything about NU, including its curriculum, location, emphasis on group learning, and cooperative atmosphere, seems to suit me best. I now know that I want to gain a medical education at Northwestern. Hopefully, this is exactly what I will be doing next fall.

### YASHA KADKHODAYAN



My experience with medical school interviews has mostly involved relaxed, non-confrontational conversations; therefore, it really hasn't been as complicated as many people make it out to be. In fact, if you look at it from the right perspective, it can actually be fun. When else do you get to talk for 45 minutes straight about only

yourself? What's more is that your interviewer is actually listening and is genuinely interested—at least that has been the case for me (I have heard some horror stories).

One of the places I interviewed at was Washington University. The thing that stands out the most about Wash U. is that the people there are really excited about their school. They are all very eager to show you why Wash U. is one of the best schools in the country. It is definitely a school that puts students first. The night before the interview, the students put on a pizza party for the interviewees at their residence hall in order to get people acquainted with each other. They also provided a room at the residence hall for the night and served breakfast the next morning. The day proceeded with a financial aid information session, the actual interview, lunch, and finally a tour of the medical center.

# Features

I also interviewed at Duke University; however, that experience definitely started out badly—not because of the school, but because I had a horrible cold. When I stepped off the plane in Raleigh-Durham, I realized that because of my congestion and pressure changes in the cabin, I had lost the majority of my hearing (which thankfully came back the next day). The nice thing was that the school had arranged for me to stay at a student's home in which I had my own room. It was definitely quite comfortable, and I would probably have enjoyed it much more had I not been sick. At Duke, they have prospective students interviewed by current medical students as well as faculty members. I thought both of my interviews went well, except for the fact that I was sneezing, coughing, and blowing my nose throughout the whole experience. The moral of the story is that it is a good idea to be prepared for unexpected "variables," as my student host called it.

## KATHERINE HERNANDEZ



When I first sent in my AMCAS application to the medical schools of my choice, I thought that interviews were so far ahead of me. I really didn't consider them until I received notice of my first one, which was at the University of Iowa. I was quite happy, and surprised, to have been considered to be

interviewed, especially since I was an out-of-state student. From that point on I had to begin to prepare all the things that I would need for my interview, such as buying a suit, organizing my mode of transportation, reading some books on medical school interviews, and even asking myself sample questions from these books and answering them as if I were in the interview itself. Of course I did much more to prepare for my first interview than my later interviews because of paranoia. Your first interview is usually the guinea pig of interviews and you'll learn from there what you need and don't need to prepare.

Fortunately, I then received four more interviews after my University of Iowa interview, one of them being at UIC. I found myself being a bit nervous, because I thought that the interviewers were expecting me to know everything about the UIC College of Medicine since I did my undergraduate studies here. When I arrived to the assigned meeting room and took a look at the schedule for the day, I was happy to see that my interview was right after lunch instead of the usual 3pm slots that I was accustomed to. Lunch, which was ordered from Corner Bakery, was the best that I had so far at any interview.

Well, when the time came for my interview, I sat in a room with two interviewers. One interviewer was part of the administration at the College of Medicine and the other was a M2. Both interviewers were very friendly and laid back.

They made my interview very comfortable and relaxing. There was not one time during my interview that I felt pressured or nervous. Since they only had my AMCAS essay, the interview was basically to find out more about me and discuss my interests and experiences rather than just a plain interrogation. Overall, this was one of my best interviews so far, and my great experience at UIC brought me a great reward: an offer of acceptance.

## MONICA OBEROI



Most people spend Halloween dressing up in costumes and trick-or-treating. I, on the other hand, spent Halloween interviewing at Washington University School of Medicine! I had arranged my interview date by emailing WUSM any three dates that I could come to St. Louis. This flexibility in scheduling an interview was not something most other medical

schools offered. WUSM actually offered a great deal to its interviewees, including a pizza party, numerous housing options, and a pre-interview breakfast. Unfortunately, I did not take advantage of these options. Instead, I was able to spend quality time with my parents as we spent 5 hours driving to St. Louis!

I stayed in a hotel nearby, and as instructed, I arrived at the admissions office at 7:45 am the next morning. I was handed a packet of information outlining my interview day and then told to go to an adjacent conference room for an orientation session. As I waited for the orientation to begin, I noticed that most of the other applicants were from Harvard, Yale, or Johns Hopkins, which only served to increase my anxiety. Fortunately, I was able to relax once the session began. A dean conducted the orientation. She provided us with financial aid information, general information about WUSM, application statistics, and some of the benefits of attending WUSM. The benefit I found most interesting was the way WUSM strives to treat all of its students as colleagues, and the way this treatment leads to a tremendous amount of satisfaction among WUSM's students.

Following this orientation, I had the opportunity to see this contentment first hand. As I waited for my interview to begin, numerous students approached me and emphasized how much they loved it at WUSM. All of the students were friendly and helpful. They took the time to answer all of my questions, and some even offered their email addresses so that I could contact them in the future. The enthusiasm and "school spirit" I saw in those students was unparalleled.

After an hour of speaking with medical students, it was time for my interview! A male dean interviewed me. This dean undoubtedly conducted my most thorough medical school interview. It was immediately clear that my interviewer had

# Features

meticulously read my file (including my AMCAS, secondary essays, and recommendations) when he addressed me as “Mona,” a nickname that I had never discussed with him. For the next hour and a half, we conversed about nearly every aspect of my file: everything from my research work to the origin of my mother’s name! My interviewer truly made an effort to learn about me as a person. Essentially, the in-depth, personal interview I had at WUSM was probably my fairest interview; I was given an opportunity to openly discuss everything in my file.

Next, I proceeded to have lunch with another physician in the restaurant on top of WUSM’s hospital. The buffet lunch was hands down the best lunch at any medical school I visited. Following lunch, a fourth year medical student took a group of applicants on a tour of the campus and hospital. Afterwards, I thanked the admission’s staff, met my parents, and then started the commute back to Chicago. So even though I did not end up with a bag full of candy on Halloween, I had a great time at WUSM. I even received some candy from the Admission’s Office!



## SHUCHI PATEL

I had been told that University of Chicago has tough interviews to see how you react under different conditions, and my experience was no different. When I arrived at the office of the faculty member who was to interview me, the pressure began. I stuck out my hand for an introduction and she ignored it. When I

asked her name, she replied “Are you going to interview me, or am I supposed to interview you?” And it didn’t get any easier. She bombarded me with questions that ranged from the typical, why I want to be a physician, to my theology and then my knowledge of current subjects. The toughest question, though I thought I had prepared it well, was why I want to be a doctor. I told her the typical answer of wanting to help people, but she wasn’t satisfied and asked me the question I was afraid of. “Many professions help people, you could be a nurse or an EMT, why a doctor?” I have to admit she is right, so do give this question a lot of thought and sincerely mean what you say.

She asked me many questions that seemed strange because of the way that she jumped from subject to subject. I had mentioned in my essay about the ‘Brotherhood of man under the Fatherhood of God’ so she asked why God was a male, and then as I answered, she asked me what my favorite organ in the body was. That really took me by surprise since I hadn’t yet even finished giving her my answer to the other question. At this point I said that I would answer that question, but I would like to finish answering the first question. Amazingly, it seemed as if this was what she was after all along. To see if I could remain calm, yet be assertive enough

to express my viewpoint, and after that, it was smooth sailing.

So my advice to all people interviewing would be to stay calm. Don’t let the interviewer scare you. He or she is just a person, and the calmer you are, the more you can impress them.

*The compiler of this article, Amy Parecha is a second year psychology and biology major. She hopes to attend medical school after graduating.*

## REFLECTIONS ON THE INTERVIEW....

### TOUGHEST QUESTION

- What is your greatest weakness? (*Washington U.*)
- If you had to choose one type of healthcare system, which one would it be: socialized healthcare (like England) or privatized (like the U.S.)? (*Northwestern U.*)
- Why do you want to be a doctor? (*U. Of Chicago*)
- Let’s say you are performing your rotations as a fourth year student, and you come across a patient whom you feel should receive a certain treatment. Your resident, however, insists that you give the patient another treatment. How do you handle this situation? (*Northwestern U.*)
- Can you explain why you didn’t do as well in certain classes? (*Indiana U.*)

### UNEXPECTED QUESTION/COMMENT

- My faculty interviewer at Duke placed his hand on my shoulder at the end of the interview and said, “Son, in the end, it really doesn’t matter where you go to medical school.” I’ve been trying to interpret this comment ever since! (*Duke U.*)
- Talk about something that is not written in your application. This question is tougher than it seems! (*Georgetown U.*)
- What is your favorite organ in the body? (*U. Of Chicago*)
- Name three politicians you would invite to a barbeque – why did you choose that combination? (*Northwestern U.*)
- How do you get your news? (*Indiana U.*)

### ADVICE

**Yasha:** Definitely take it easy and try to have fun with it.  
**Mona:** Communication skills are key. I think the most important thing interviewers are looking for is how well you can communicate your ideas. The most important thing is that you explain and defend your answer with confidence.

**Shuchi:** Stay calm!

**Ninad:** Try to relax. Try to stay with a student the night before your interview – you can learn about the school and the admissions process.

**Katherine:** Be yourself! Don’t ever lie, because they’ll find out.

# Features

## Helping to Save Lives

Alisha Bhatia



During the first weeks of the semester, a flier with the following plea could be found posted almost everywhere around campus: "My name is Sanjoy Sen. I am 26 years old and I was diagnosed with Leukemia three and a half years ago. I underwent aggressive chemotherapy, and was in remission until a few weeks ago. My doctors have said

my leukemia is returning. I am making this plea on my behalf as well as that of countless others. By going through the simple process of registering as a potential marrow donor, you are giving me as well as many others a chance to live. Without a greater representation, we will not have a fighting chance at finding matches for our people. Please register to become a potential bone marrow donor."

Leukemia and other fatal blood disorders can happen to anyone, anytime, anywhere. It is an equal opportunity disease. Scientists do not know what causes leukemia, but it usually proves fatal unless a matching donor is found. The chance of finding a match is 1 in 20,000 to 100,000. Large numbers of donors from the same race increase the chance of a patient finding a match for a life-saving marrow transplant.

South Asians (from India, Pakistan, Bangladesh, Sri Lanka) make up less than one percent of The National Donor Registry. To recruit more potential bone marrow donors from UIC, several student organizations held a blood marrow drive on January 23. Their goal was to register more South Asians for blood marrow donations so that the number of South Asian blood donors would increase. Currently, of the 4.0 million registered donors, only seven percent are South Asian.

The drive was sponsored by SAMAR (the South Asian Marrow Association of Recruiters). SAMAR is made up of a group of volunteers, led by Ms. Rafiya Peerbhoy Khan. They are dedicated to recruiting South Asians for bone marrow donations. Since 1992, they have reached out to several thousand people during religious, social, and business gatherings, and also to students everywhere, recruiting more

than 15,000 volunteers. Their goal is to reach 50,000 volunteers. Currently, over 35 patients await marrow for transplantation and four transplants have occurred in the last year. SAMAR hosts bone marrow drives in India and other South Asian countries to increase the chance that these patients will find a matching donor.

The marrow donating procedure can be a fairly simple one. When a person agrees to become a bone marrow donor, their blood is first tested to see what antigens are present. The Human Leukocyte Antigens (HLA) are located on the white blood cells, and they are the basis for the rejection of foreign tissues. Because there are 20,000 types of marrow, the chance of finding a match is only 1 in 20,000. If the blood types match, the donor is then given a physical examination to ensure the health of both the donor and the patient. Marrow is taken from one or both sides of the hips using a syringe. The procedure is performed using a light anesthetic and it usually takes no longer than an hour. Three to five percent of the donor's marrow is extracted, but it is

usually replenished within ten days. There is no cost to the donor, and they are usually able to resume their normal lifestyle within one to two days.

Because not all South Asian countries have the capacity to test the donations by themselves, SAMAR is linked to the National Marrow Donor Program. The NMDP is the worldwide organization

that expedites transplants for dying patients who cannot find matching donors within their families. Currently, the NMDP successfully assists in 100 transplants each month. Using the facilities of the NMDP, SAMAR is able to recruit more people from South Asia. By reaching this population, they can increase the number of successful transplants performed each year and save more lives in outlying areas of the world where matching donors are difficult to encounter.

*The author, Alisha Bhatia, is currently a first year GPPA medicine student majoring in psychology and biology. She aspires to be a pediatrician in the future.*

*The chance of finding a match is 1 in 20,000 to 100,000. Large numbers of donors from the same race increase the chance of a patient finding a match for a life-saving marrow transplant.... South Asians (from India, Pakistan, Bangladesh, Sri Lanka) make up less than one percent of The National Donor Registry.*



ETERNAL QUEST FOR HOPE TO LEUKEMIA PATIENTS

# Features

## Feature Interview: Dr. Rhonna L. Cohen

Gaurav Gaiha



Dr. Rhonna L. Cohen is more than a faculty member at the Center for Molecular Biology of Oral Diseases. She is a woman who has dedicated her life to oral health research and to the advancement of future health professionals.

Dr. Cohen entered the field of dentistry and oral health research because she had become fascinated by disease and the treatment of disease. As a child, she spent a lot of time observing her grandmother battle illness and became intrigued by how a hospital operated in order to provide care for patients. After entering Roosevelt University in Chicago, Dr. Cohen realized that she wanted to enter a health profession not only to help people, but because it required an extensive amount of learning and thinking. As she said herself, "I wanted to be involved in decision making. Entering the field of oral health called upon my ability to problem solve, and that is important."

As a result of her decision, Dr. Cohen graduated with her B.S. and then attended the University of Illinois at the Medical Center (now UIC) where she received her DDS in 1972, and her PhD in 1976. When asked about her experience as a woman in a commonly male dominated profession, Dr. Cohen states "I was one of very few women in my dentistry class, but it was a good time in the 70's. People were flexible and understanding." Dr. Cohen never felt any job discrimination, and was always welcomed and supported. She adds that "to have a woman in your lab was seen in some ways as token."

When asked of her crowning professional achievement, Dr. Cohen did not cite an experiment, or a scientific paper. Instead, she states that her greatest achievement has been the endeavor - the 30-year long process of making a life that is composed of research, teaching, and working with students. "I have enjoyed greatly the opportunity to work with young people...to see them prosper and learn, and be happy. It is clearly the

best part of academic life."

Despite her satisfying and successful career, there are some things that Dr. Cohen wishes she could change. For example, Dr. Cohen chose to go into research because she felt it was more challenging, and demanded more from her. Although she does not regret the decision, she still wishes she had not lost the patient contact she once had. "I worked really hard to build up my practice from scratch...and I really loved it. I loved working with my patients."

Dr. Cohen also discussed personal matters that were difficult to manage. For example, like many other professionals, she had trouble trying to satisfy the demands of her career and her family. "I never was able to really work out the balance. There were always needs at work...and I wasn't always sensitive to my family's needs as a result."

From these difficulties, Dr. Cohen is able to offer undergraduates very helpful advice. Above all, Dr. Cohen says that when entering a health field, "It's most important to love what you do; in order to maintain a standard of excellence for the duration of your career, work that demands intensity, both intellectual and emotional, requires passion and commitment." Furthermore, Dr. Cohen added more advice: "Your priorities may change, but you have to make sure that the passion is the same." Dr. Cohen points out that in finding the balance, one needs to be able to adapt to a variety of circumstances without losing what one holds dear. "In your career, don't lose your drive. But also don't forget about your own personal interests. If you feel like you're giving up too much of one thing for another, realize that

no career decision is absolute and that there is no shame in changing one's mind and doing something different, at any stage in life."

**"I have enjoyed greatly the opportunity to work with young people...to see them prosper and learn, and be happy. It is clearly the best part of academic life."**

*Gaurav Gaiha is currently a second year student majoring in Biochemistry and Economics. He is a Goldwater Scholar Nominee for 2000-2001.*

# Literary

## Helpless?

Imelda Huerta

Courtesy of *Body Electric*

Patient is a fifty-six year-old woman with a history of lung cancer with metastases to the brain and spine, presenting with fever, chills, shortness of breath, and a productive cough for two days. Patient is alert and oriented x3. But not for long. When Madelyne was admitted she knew who and where she was, and though she could not remember who the president was, she knew it was 1998.

"The President? No, I'm sorry dear, I don't remember."  
 "The year? Oh, that one is easy! I know that one! It's 1998."

Madelyne was a sweet woman, addressing everyone as "dear" and always happy to see you. She was very friendly and very talkative. She was from Scotland, and had four children and two grandchildren. Her children took turns visiting her every afternoon, and they wanted her at home as soon as possible. They wanted her to die at home and were afraid she would die at the hospital.

As the days passed, Madelyne's pneumonia got better, but her mental status got worse. Eventually, she grew silent and stared at the wall. One day, I walked into her room and found her lunch untouched. I asked her if she was hungry and she said, "Oh yes dear". I asked her if she needed help but she said "No dear". I asked her again if she was hungry and since she responded again that she was, I decided to help her eat. I sat down next to her and began feeding her. She ate all of her lunch and smiled at me in between bites. I was glad I could help.



In the next couple of days, Madelyne got worse. She would not eat, even with "one on one assistance", and she would not talk. She only stared at the wall and seemed to be somewhere else. It was very frustrating to visit her now because no matter how much you talked to her, she would not respond. She wouldn't even look at me. One morning, I walked in the room and Madelyne was again staring at the wall. I fixed her pillow and tucked the covers around her and as I did, she grabbed my hand. I looked up at her and she was staring at me now.

"Help me," she said.  
 "What do you need Madelyne?" I asked.  
 "Help me."  
 "How Madelyne?"  
 "Help me."  
 "What can I do for you? What is it? What do you need?"  
 "Help me."

I didn't know how. I didn't know what to do for her, how to help her. I didn't know what she needed.

She didn't let go of my hand and so I sat down and held her hand until she fell asleep. She seemed so peaceful as she slept. The urgency I saw and felt when she was asking for my help was gone. I guess I helped her after all. Madelyne died that afternoon.

## Medical Student's Lament

Janet Wong

Courtesy of *Body Electric*

I no longer feel human.  
 The center of my brain has fallen out—  
 phone numbers of friends,  
 my mother's lullaby when I was three,  
 yellow daffodils in the rain—  
 I no longer linger on these.  
 My parents are now  
 white-coated lecturers bringing  
 simultaneous information  
 five forms of data:  
 chalk, overhead pen,  
 you must, you must, you must,  
 photos of people who you want to cry about so you laugh,  
 sounds and the power of the multiple choice test.  
 Sometimes people move to a new town  
 and they forget why they came.  
 They mow their lawns,  
 they make friends,  
 they get used to living next to the cemetery,  
 above radioactive ash, and without telephones.  
 In the smallest ways,  
 I've moved into medicine's  
 latest storefront on the mall.  
 I've learned to live on promises  
 of a better day next week,  
 next year.  
 When Thursday comes,  
 I may forget why I came.

## News

# Cell Phones: Are They Ha

Yasha Kadkhodayan

As anyone can conclude by taking a few cursory looks across campus, cell phone use has been growing rapidly over the past few years. There is a new cell phone user in the U.S. every two seconds. Not surprisingly, there are currently over 110 million wireless phone subscribers in the U.S.—or approximately 40% of the population. By the year 2005, it is predicted that there will be over 1.26 billion users worldwide<sup>1</sup>. These mammoth statistics of so many people regularly pressing radio frequency (RF) transmitters to their heads, in combination with periodic news of recent research regarding a possible link between cell phones and cancer, have led to great public interest in this area.

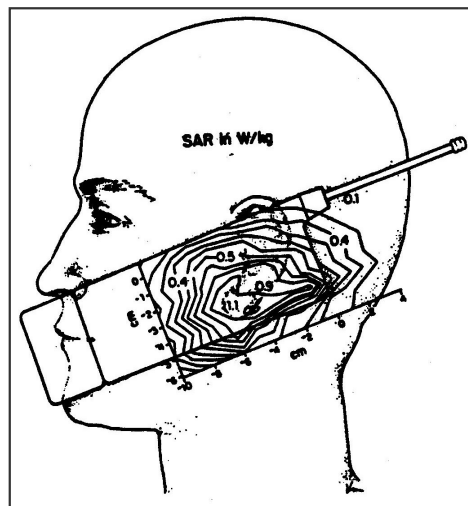
The concern began in 1992 in a U.S. courtroom when a Florida man, David Reynard, filed a lawsuit alleging that his wife's cellular phone use had caused her deadly brain cancer. The case was then popularized in 1993 and much more recently in 1999 when Reynard appeared on television in popular talk shows. The case had been dismissed by a Federal court due to a lack of scientific evidence in 1995. This case seemed to spark a series of comparable lawsuits—all of which were equally unsuccessful for the same reason. What the Reynard case did accomplish, however, was an increased concern by both the public and the scientific community to further study any potential relationship between cell phone use and cancer. Since the case, numerous relevant studies have taken place, but a definitive conclusion has yet to be drawn.

Cell phones in the U.S. primarily operate at two frequency bands—850 and 1900 MHz. These frequencies are more or less in the microwave region of the electromagnetic spectrum. Unlike X-rays and gamma rays, these frequencies are known as non-ionizing forms of radiation. Although non-ionizing radiation does not cause immediate damage like higher frequency radiation does, it is still suspected of causing damage under long-term exposure. The most noticeable effect that non-ionizing radiation has is heating, which can cause damage to biological systems. For example, the blood-brain barrier is known to become more permeable under heat; however, it is unlikely that today's low-powered digital phones can cause sufficient heat to allow toxins to cross over from the bloodstream to cause neural damage. Instead, a possible link between exposure to non-ionizing radiation and cancer is

being investigated.

Throughout the mid to late 1990's, numerous studies, many funded by the wireless phone industry, have been conducted in an attempt to uncover this potential link. The largest attempt was the Wireless Technology Research (WTR) program, which was funded by U.S. phone manufacturers and cost \$27 million. This program ended in 1999 with no official conclusion and minimal published studies. Currently, there are over 200

continuing studies that are looking into this issue around the world. The reasons that the completed studies have been so inconclusive include: that there are numerous causes of brain cancer, that brain cancer takes years to develop, that there are a variety of different phones, and that there is no standard way of reproducing the radiation.



When examining possible carcinogens, the usual methods of research include epidemiological studies and animal testing. The first epidemiological study following the popularization of the issue was conducted by epidemiologist Kenneth Rothman. His work was funded by the WTR, and he found that

there was no difference in death rates among those who used handheld phones with the antennas held close to the head compared with those who used car phones with the antennas mounted on the outside of the vehicle. The other major epidemiological study was conducted by Lennart Hardell of the Örebro Medical Center in Sweden. This study compared cell phone use among those with brain tumors with cell phone use in healthy individuals. No link was found here either; however, there was some indication that the location of the tumor was dependent upon the side of the head to which the cell phone was held. These indications appear to be recall biased and statistically insignificant.

Three major epidemiological studies have been published within the past few months. The first was published in the *Journal of the American Medical Association* on Dec. 20, 2000. This study compared cell phone use among nearly 900 cell phone users with and without brain cancer. The study found little evidence for a link. The *New England Journal of Medicine* also published a study with similar results around the same time. A more recent study published on February 7, 2001 in the *Journal of the National Cancer Institute* also

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## ardous to Your Health?

found no relationship between cell phone use and brain cancer in 420,000 Danish cell phone users. A major challenge that these kinds of studies face is that brain cancer can takes years to develop, and it has been impossible to conduct a long-term study given the relatively recent widespread use of cellular phones.

Studies looking for a link between brain cancer and RF exposure to rats have been carried out by many researchers, including Chou et al., 1992; Toler et al., 1997; Frei et al., 1998; Adey et al., 1999, 2000;

and Zook et al., 1999. All of these have found no significant relationship; yet, there is an uncertainty about how relevant animal studies are to humans—especially since the rats are exposed to whole-body radiation while human exposure is typically restricted to the head. Another major study has shown

the opposite effect. Henry Lai of the University of Washington in Seattle conducted a study in 1995 showing that whole-body radiation exposure to rats at a power of 1 watt per kilogram of body mass resulted in the breakage of DNA bonds in brain cells, which is the root cause of cancer. A group of researchers funded by Motorola at Washington University in St. Louis as well as a research group funded by the Belgian government have been unable to reproduce Lai's results. On the other hand, other groups have found results similar to Lai's when experimenting on mice that were already susceptible to leukemia.

To prevent biological damage that would occur at high power levels, the Federal Communications Commission has set a limit on the amount of radiation that cellular phones can emit. The FCC limit is a specific absorption rate (SAR) of 1.6 watts per kilogram of body mass averaged over any one gram of tissue (i.e. 1.6 milliwatts per gram). Although modern cell phones function at relatively low power levels, the FCC limit is often approached since these RF transmitters are placed so

Rank	Manufacturer and model	SAR level (digital)
1a	Ericsson T28 World	1.49
1b	Nokia 5170i	1.49
3a	Nokia Digital 5160	1.45
3b	Nokia 5170	1.45
5	Sprint Touch Point 2200	1.38
6	Samsung Upoar	1.44
7	Nokia 6162	1.42
8a	Nokia 6185i	1.41
8b	Qualcomm QCP-1960	1.41
10	SonyCMB1200,2200,3200	1.39

Source: *CNET Wireless*

Rank	Manufacturer and model	SAR level (digital)
1	Motorola StarTAC 7860	0.24
2	Qualcomm pdQ-1900	0.26
3a	MitsubishiTriumGalaxyG130	0.35
3b	Motorola TalkAbout 2297	0.35
5a	Motorola ST7797	0.39
5b	Motorola T8097	0.39
5c	Motorola P8097	0.39
8a	Motorola StarTAC 7790i	0.42
8b	Motorola V60C	0.42
10	Motorola i1000plus	0.43

Source: *CNET Wireless*

close to the head. There are a multitude of variables that can affect the SAR, however, including the angle of the antennae to the head, the position in which the user holds the phone, and the conductivity of the user's head. Some studies have shown that phones with an increased angle between the antenna and the head, such as certain flip phones, have lower absorption rates than non-flip phones.

For those concerned about cell phone radiation and its relatively unknown long-term effects, there are a number of things one can do to minimize any potential risk. First, one could make use of SAR data for specific phone models. Second, one could use the phone only when receiving a strong signal. When the signal is weak, the phone must put out more radiation to maintain a connection. Third, one could use a hands-free earpiece while keeping the phone away from the body. Lastly, one could simply use a landline phone whenever possible.

- For more information, visit:
- FCC site on RF safety: <http://www.fcc.gov/oet/rfsafety>
  - CNET Wireless: <http://wireless.cnet.com> (contains links to radiation information)
  - Cellular Telecommunications & Internet Association: <http://www.wow-com.com>

1). Cellular Telecommunications & Internet Association

Yasha is a senior majoring in Bioengineering – he is planning on going to medical school next year.

# News

## Are You For-86?

**Mehreen Ahmad**

Looking back, Camille recalled her first abortion, which involved a surgical procedure. She remembered the fear and tension she felt at the thought of undergoing an operation, a feeling that many individuals experience for all types of surgical treatments. Here she was again, in the same predicament, wondering what choices she had. She hoped to minimize the stress and anxiety she felt during her previous abortion. While talking to her family doctor, she became aware of the drug that could solve her dilemma.



He informed her about a drug called Mifepristone widely known as RU-486, which was invented in France by Dr. Etienne-Emile Baulieu in 1980. "The letters are taken from the initials of the pharmaceutical company Roussel-Uclaf. The "486" is an arbitrary lab serial number" <sup>2</sup>. For the past 15 years, thousands of

women, from over 20 nations, have been involved in dozens of clinical research studies on RU 486.

"In the U.S. RU-486 is to be taken within 49 days after the start of the last menstrual period. It is an antiprogesterin" <sup>2</sup>. By binding to progesterone receptors on the wall of the uterus, RU-486 inhibits the binding of the woman's natural progesterone. This causes the shedding of the uterine wall, which is what occurs during a normal period. "RU-486 also opens the cervix, and causes mild contractions, which help expel the embryo" <sup>2</sup>. The initial dose often causes many side effects, including: exhaustion, headache, diarrhea, weakness and/or nausea.

A few days later, the woman takes a prostaglandin pill, typically misoprostol, which causes her cervix to soften and dilate. As a result, her uterus begins to contract. "French studies showed that in 54% of the time, the embryo is expelled within 4 hours. In another 22% of the time, it is expelled within 24 hours. She is observed in a clinic for 4 to 6 hours" <sup>2</sup>. Further into the procedure, the treatment causes bleeding and deep cramps.



Later, she is examined to determine if the abortion was complete.

The procedure is effective approximately 95% of the time and is most successful in the first 7 weeks of pregnancy. The medicine becomes less effective and the side effects are more acute after 9 weeks. Bleeding can persist for up to 9 days, where as in a surgical abortion, it lasts about 5 days. "Approximately 1% of women will have heavy bleeding, which requires additional treatment" <sup>2</sup>. The RU-486 treatment completely fails to trigger an abortion in about 1% of the women; nearly 2 to 3% of women undergo an incomplete abortion, which requires a follow-up surgical abortion. "About 0.1 to 0.2% of the women experience excessive bleeding and require a blood transfusion" <sup>2</sup>.



The RU-486 treatment is by no means trouble-free – it may result in some unpleasant side effects. Many women, however, find it more desirable than the typical early-pregnancy surgical procedure.

As long as the patient does not have a history of heavy smoking, heart problems, or high blood pressure, the RU-486 treatment is a relatively safe form of an abortion. "Clinics have treated more than 1,600 women so far with no serious side effects" <sup>1</sup>.

Even though there is disagreement about whether terminating a pregnancy is morally acceptable, in many abortion cases, RU-486 may be the safer, more effective, and less mentally painful option. In Camille's case, after hearing the options from her family doctor, she wondered if she really was for "RU-486".



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*Mehreen Ahmad is a junior majoring in Health Information Management.*

# News

## Food for Thought: the Parents' Defense

Nirav Shah

"Just eat it. It's good for you." Undoubtedly, you all have heard these dreaded words at the dinner table over and over again. *If they won't tell me what it is, it can't be that good*, you think as you discard the notion almost immediately. *This crunchy green blob looks suspiciously like the stuff at the bottom of my refrigerator. There's no way this could be good for me.*

"An apple a day keeps the doctor away. This is another expression assumed to be as trivial as it is trite. *How much can an apple possibly do to keep the doctor away*, we question. *It must be just another one of those adages, so lets nod our heads and humor them.* But as studies are now showing, our parents are not as crazy as we once decided they were. Apples are an invaluable source of fiber for the body, both water-soluble and water-insoluble



forms. The water-soluble variety comprises an estimated eighty percent of an apple's fiber<sup>1</sup>, which lowers the body's blood cholesterol. The water-insoluble fiber prevents the activation of various carcinogens. The flesh

and skin contain *phytonutrients*, which give apples their antioxidant properties. These properties work to combat heart diseases, cancer, obesity, and hypertension<sup>1</sup>. Thus, in addition to containing no fat and minimal calories, the chemicals contained within a single apple have preventive medicinal effects, lending merit to the age-old adage.

Researchers also tell us that fruits and vegetables in general contain antioxidants. A recent study in the *Journal of Neuroscience* clearly advocates the influx of fruits and vegetables into the daily diet. Dr. James Joseph highlighted the effects of such antioxidants on the brain in a study at Tufts University. He characterized mental decline as directly correlated to the number of brain cells lost. The results demonstrated that the rate of mental decline slowed for subjects fed a diet laden with fruits and vegetables<sup>2</sup>. Joseph further discovered that there is a link between Alzheimer's, Parkinsons, and other similar degenerative nervous system diseases and lack of antioxidants in the diet. Specifically charted were the effects of spinach and strawberries in independent studies, both of which produced similar results. While such studies are not conclusive, there is evidence

nevertheless of a link between antioxidants and prevention of such diseases.

As it turns out, antioxidants of fruits and vegetables are not the only phytonutrients beneficial to the body. A study at the University of Illinois at Urbana-Champaign showed that legumes (i.e. beans, peas, lentils, etc.) contain large amounts of resistant starch, a form of carbohydrate that contains the organic butyrate, which aids in cancer prevention<sup>3</sup>. In another study, Dr. Jon Michnovicz and Dr. Leon Bradlow demonstrated that "increased consumption of cruciferous vegetables such as broccoli, cabbage and Brussels sprouts may reduce the risk of certain cancers, particularly breast cancer"<sup>4</sup>.

In addition to preventative medicinal effects, certain chemicals serve to enhance normal regulation processes within the body. Michnovicz and Bradlow also showed that cruciferous vegetables contain indoles, which balance hormonal levels, detoxify the intestines and liver, and reinforce the body's immune system<sup>4</sup>. Unexpected fruits and vegetables play a role in bodily regulation as well. Garlic has been proven a natural antibiotic and fungicide, boosting the body's ability to resist disease, to maintain normal blood pressure, and to nourish the urinary system<sup>4</sup>. Long considered simply a plate decoration in western culture, parsley is now known to regulate blood pressure as well as cleanse the blood<sup>4</sup>. Even the watermelon seeds we spit out have important consequences; they help the body eliminate excess water<sup>4</sup>. Carrots have long been known to possess beta carotene, which reduces the chance of eye disease. Eating one carrot a day can help prevent macular



degeneration, a disease of the eye that eventually leads to blindness<sup>5</sup>. For those who feel continuous depression, eating spinach has been proven beneficial to one's spirit. It contains high levels of folic acid, and when the body lacks this nutrient, depression is a consequence<sup>5</sup>. Ginger root is yet

another important vegetable, as it relieves migraine headaches and fights nausea caused by motion sickness<sup>5</sup>. Finally, for the insomniac there is an unorthodox cure, much different (and now shown to be much more successful) than the usual "counting sheep." Studies show that eating an onion helps combat insomnia. Contained within the onion is quercetin,

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a mild natural sedative that helps the body rest<sup>5</sup>.

Compared to other cultures in the world, western culture is strikingly deficient in consumption of fruits and vegetables. People in India have known of the alimentary tendencies of these foods for centuries, as have those in China, Spain, South America, and parts of the Middle East. As studies clearly indicate, increased consumption of fruits and vegetables has an astonishing correlation with maintaining a healthy lifestyle. Thus frightening as it may be, we must acknowledge that our parents have been right at least occasionally.

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*Nirav Shah is a sophomore majoring in English and Biology.*

## Food for Thought: the Children's Defense

**Amina Khan**

To many, Hershey's chocolate syrup and Beemaid honey are just a dose of pure sugar. Yet recent studies show chocolate and honey do more than treat one's sweet tooth.

According to *Science News*, honey and chocolate treat several health conditions. Their chemical make up allows them to act as effectively as some prescription drugs. Both are rich in antioxidants, chemicals that reduce or prevent oxidation, thus preventing cell and tissue damage from free radicals in the body.

Free radicals wreak havoc in blood vessel walls, repeatedly oxidizing, and eventually creating a plaque that clogs the artery. However, recent studies show honey and chocolate both contain flavonoids, a type of antioxidant, which prevent



free radical oxidation.

What does this mean to a potential heart patient? Honey and chocolate may help dramatically if included in his diet. They both reduce the chance of a heart attack, lower blood pressure, and relieve other symptoms of cardiovascular disease.

Additionally, *Science News* reported that new studies indicate

chocolate may benefit the heart yet another way: by reducing blood clotting. People at risk of heart attacks take aspirin to reduce clotting. Chocolate's flavonoids work the same way. In a sense, chocolate could be considered a mild aspirin.

The antioxidants in honey also allow it to act as a potential sunscreen and moisturizer. Honey retains the skin's natural moisture and its antioxidants protect skin cells from damage, reported *Science News*.

These recent findings have made both honey and chocolate much more attractive to consumers.

"If the beneficial food is something I like already, and if it was chocolate, I'd buy a whole lot more," senior Aalia Khawaja said.

Others even consider natural foods to be safer than most lab-manufactured products.

"There's more of a chance of side effects with ready-made products than natural ones because they have so many chemicals in them," sophomore Ani Gangopadhyaya said.

If one chooses to go the natural route, then how does he know which type of chocolate or honey is healthier? The answer lies in the color. The darker the honey or chocolate, the more antioxidants it contains, and thus the more beneficial it is.

However, as a precaution, too much of a good thing does not help either. *Science News* said data suggests that as long as people do not overindulge, people should not feel guilty eating chocolate or using honey as a sweetener. The human body also tastes chocolate's and honey's sweet benefits.

# News

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*Amina Khan is a sophomore majoring in Economics.*

## Students Need Z's Before A's

**Alisha Bhatia**

It's the typical college student situation. A professor assigns a paper to be turned in after two weeks. Students leave the classroom thinking, "Two weeks? That's plenty of time! I'll start it later." A week later, the assignment sheet has become buried beneath a pile of other assignments that are due in two weeks, and the original assignment is nearly forgotten. Then, the night before the paper is due, it suddenly occurs to



the temporal lobe, the portion of the brain that allows for language processing, took more time to be activated in sleep-deprived patients than in rested patients. Memory performance was also impaired. When given simple arithmetic tests,

sleep deprived subjects left more questions blank and answered more questions incorrectly than the rested subjects did. It was hypothesized that the brain shifts its activity from normal areas to other areas to compensate when the body is sleep deprived.

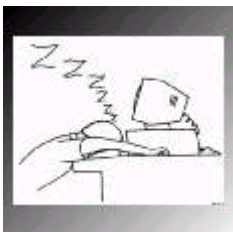
Diminished mental focus, impaired judgment, memory and concentration problems, daytime sleepiness, diminished patience, muscular weakness and possible physical deterioration are also effects of sleep deprivation. It can also make driving and operating equipment extremely dangerous.

When given simple arithmetic tests, sleep deprived subjects left more questions blank and answered more questions incorrectly than the rest of the subjects did.

the student, after three hours of talking with friends and three hours of watching movies, that he has a paper to write. He sits down to write the paper at 2:00 in the morning and does not finish until three hours later. Since his first class is at 8:00 a.m., he only has time to sleep for two and a half hours. Later that day, he is tired and grumpy, but he must stay up again that night to complete all his assignments that were not completed before.

Successive nights of staying up late and not getting the recommended amount of sleep can be detrimental in the long run. The University of Cali-

ifornia at San Diego School of Medicine and the Veterans Affairs Healthcare System has performed numerous studies to show that sleep deprivation can have harmful effects on a person's brain activity<sup>1</sup>. Their studies found that



Sleep deprivation, though, is avoidable. The recommended amount of sleep that a college student gets is anywhere between five to eight hours. Although it is true that a lack of sleep one night can be made up for the next, several successive nights of sleep deprivation can be extremely harmful. The best advice students can follow is to arrange their schedules



however it is necessary so that they get at least five hours of sleep a night<sup>2</sup>. They should try to be consistent with their sleep and wake-up times. By understanding our circadian rhythms, we will understand how much sleep we need to be productive and at what times of the day we feel our best. Caffeine should also be avoided right before going to bed because it can alter how well a person sleeps. And the next time

a professor assigns a paper due in two weeks; the first thought in students' minds should be, "Two weeks? No problem! Maybe I'll start it this weekend instead of waiting until the night before it's due."

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# Invited Opinions

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## FROM PIGS TO MEN

*Xenotransplantation is a controversial procedure using the organs of animals for human transplants. Thus far there have been many unsuccessful attempts at this procedure, so the debate remains as to whether further research should continue and what the potential benefits and consequences may be.*

### BEING HOPEFUL TO A POTENTIAL PROMISE

Angelo L. Lambropoulos

Ever since the birth of mankind, animals have been effectively utilized as a continual source for survival. They have been eaten, worn, used as tools, fertilizer, and even for decorative purposes. Today, man once again enters a quest in an attempt to overcome the vulnerability that questions his continued existence. The stem of this fragility can be traced down to an existing scarcity of suitable donated organs and tissues available for transplantation. Tens of thousands of people currently await for the most miniscule odds to come through for the chance to be a donor organ recipient, as three thousand people die each year when their odds fail them. The fact of the matter is that demand for transplanted organs dramatically exceeds that of the actual supply available. But how does science actually decide who the recipients will be for the necessary organs, and who should sit patiently to wait out their death? The answer is: it doesn't. Instead of implementing some sort of lottery, researchers seek light in xenotransplantation, the exploitation of cells, tissues, or organs of one animal species for the use of another. While some consider this to be 'mad science,' the continued research on xenotransplantation is imperative, for it reflects an image of hope and potential promise not only to the severe shortage of needed organs, but to the treatment of certain chronic debilitating illnesses like diabetes or Parkinson's disease. It can be the key to unlocking many idiopathic disorders, and for this reason, it has to be given the chance to shine. Placing a moratorium and/or discontinuing this prospective breakthrough means applying a great limitation to the alternatives of probable treatment for many disorders, not to mention an irreversible inhibition to the evolution of science.

The concept of cross species transplantation has recently made remarkable progress as researchers have begun to unravel the enigma underlying our extremely complex immune system. This intricate body system is the main defense against any infectious organism, and therefore, it immediately attacks and destroys anything it perceives as being foreign in the body, including implants. At the moment, powerful



immune system suppressing drugs such as cyclosporin are used to restrict attack on the foreign tissue while preserving immunity against infectious disease. Unfortunately, these drugs are only good for human-human transplants. The reason arises from the fact that mammals, except humans and apes, have a carbohydrate called alpha-Gal on their cells, and because of this absence, humans and apes possess strong immune system antibodies that attack the alpha-Gal sugar molecule. This alpha-Gal sugar acts like a red flag, labeling itself as foreign and exposing itself to attack. But before losing hope, researchers at Massachusetts General Hospital theorized that maybe the animal organ would not look so foreign if the transplant recipient's bone marrow were to be genetically re-engineered. Therefore, after breeding mice incapable of producing alpha-gal, the immunologist John Iacomini placed the gene producing alpha-Gal in the mice's bone marrow, only to find their theory proved right. The mice didn't produce any detectable alpha-Gal antibodies, and the immune response would now have a greater difficulty perceiving transplanted organs as foreign. Currently, Iacomini is studying baboons, whose immune system runs parallel to humans', in order to see if this marrow altering works well enough for a transplanted pig organ to survive.



Along these same lines, Jeffrey Platt, professor of experimental surgery at Duke University, and colleagues, have come up with some discoveries of their own as they attempt to find ways to interfere selectively with the pathways of the immune system that attack and destroy the animal organ transplant. They believe that by introducing into the pig human genes that stop hyperacute rejection, the first-line immune response that attacks

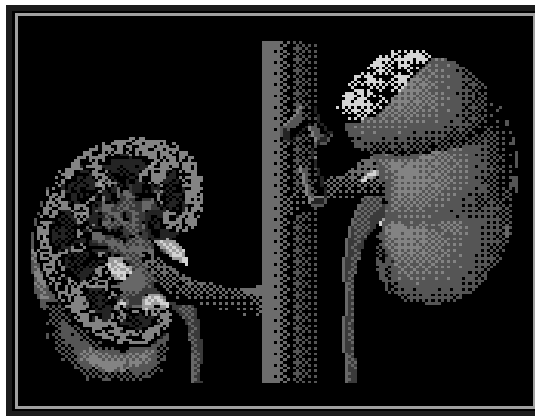
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foreign organs in the first few minutes to hours of implantation, they could possibly stop the complement cascade from attacking the pig organs as well. These specific genes encode two key proteins called delay accelerating factor (DAF) and CD59, which are part of the normal immune system stopping the complement cascade and preventing any autoimmune diseases. Platt reasoned that if researchers could put human DAF and CD59 in pig cells, they might be capable of placing a halt in the complement cascade attacking the pig organs. In other words, the grafted gene would trick the human body's immune system into believing that the pig parts were human. Platt's theory was proven correct as Duke surgeons transplanted pig hearts into baboons, soon to find out that these hearts were then able to synthesize human DAF and CD59 proteins. Platt is currently working on finding answers to acute vascular rejection, the line of defense in the immune system that acts to destroy foreign material weeks to months from the transplant. The bottom line is that science in the vicinity of this issue is not at a standstill, but rather, progressing rapidly in a hopeful direction.

Certain medical doctors have already taken the initiative in using other animal species in a last effort to save their patient's lives. Dr. Dhaniram Baruah, a London surgeon, used more than half a pint of pig's blood to inject into a man suffering from severe anemia. Many weeks later, the man is still alive as test results confirmed 'nonhuman' blood cells circulating his bloodstream. Pig-to-man blood transfusions are believed to be the answer in ensuring adequate supply of blood during operations, especially in countries where a deficiency of human blood donors is present. Interestingly enough, researchers claim that pig blood might actually be beneficial in the treatment of many blood disorders including AIDS, hemophilia, and leukemia. The use of animal cells can provide an infinite number of benefits toward new treatment alternatives and the possible end to pain and suffering for many. In addition to pig-to-human blood transfusions, utilizing cells from other animal species can offer great hope for the enormous number of people suffering from diabetes. Diabetes, being an insulin deficient disorder, is caused by the impairment of islet cells in the pancreas. Xenotransplantation can provide the possibility of using pig islets to be transplanted into diabetics, which may take control over their blood glucose levels. Pre-clinical research is also now exploring the use of fetal pig cells and tissues in the treatment of certain eye diseases, liver failure, and Parkinson's disease.

Some scientists fear animal-to-human transplants could

possibly introduce new epidemics into the human race. For instance, the AIDS virus is believed to have been originally transmitted from green monkeys. However, in xenotransplantation, for now, pigs seem to be the most suitable species, and most research carried out therefore, uses pigs. Reasons for this are rooted in taking caution but still aimed at moving ahead. Pigs are not only available in large numbers, but their organs are of size appropriate for use in adult patients, and they can be genetically manipulated to decrease the odds of transplant rejection. More importantly though, scientists believe they have identified all the retroviruses that are unique to pigs and can screen for them. Concern did arise however, when test tube experiments verified that genes of all pigs harbored an unknown virus that did not harm them but could infect human cells. Nonetheless, according to an article published in the journal *Science*, this 'porcine endogenous retrovirus,' or PERV, exposed no threat. One hundred sixty people from eight different countries who were treated experimentally with living pig tissue were tracked down to see if evidence of this PERV virus could be found, but apparently, none was noticed. Moreover, among these 160 people, 36 were high-risk patients having extremely feeble immune systems.



To ensure the safety of the public, xenotransplantation research is compelled to follow strict guidelines by the FDA. Some of these include the requirement of the participants involved to be monitored for the rest of their lives to detect any diseases of animal origin. Sponsors of the studies have to store tissue specimens from the involved humans and animals for fifty years so that the origin of any animal diseases having emerged years after

transplantation can be traced. The list of rules is ongoing, as its primary role is aimed at reducing the public health risks while not impeding medical innovation. It allows this type of research to continue on a yellow light, being cautious with every step taken forward.

There is no doubt that xenotransplantation research should persist, for the end benefits are too valuable to simply ignore. Imagine a world free of insulin shots. Envision a life where a waiting list for donor organs is inexistent, where the pain and agonizing thoughts of dying helplessly have vanished. Cross species transplantation can open doors to infinite possibilities of alternative treatment. Fetal pig cells are currently under study in finding their potential for the treatment of Parkinson's disease, diabetes, and liver failure. Pig-to-man blood transfusions might be able to aid in the treatment of many

# Invited Opinions

blood disorders. Xenotransplantation can provide an endless number of new organs to draw from, or maybe simply bridge the gap until human organs can be found. The number of lives possibly saved per day would be inconceivable. Moreover, no medical procedure is without risk, and the immune system's natural response to reject foreign tissues is normal. Researchers have already come a long way, and they continue to stretch their limits, working hard in making this breakthrough come to life. This idea, the usage of other animal species as a source for survival, is not at all an embryonic concept. It can be traced back ever since the birth of mankind. Yet still, animal right activists seem to argue and protest the issue. According to Dr. Robert Lanza though, "One hundred million pigs are slaughtered annually in the United States alone. If you can use it for sausages and bacon, the question is why can't you use it to save a life?" Xenotransplantation harbors the potential promise for the treatment of many idiopathic disorders. Without it, we become constrained inside our own boundaries, enclosed inside our own limitations.

*I chose to argue for the argument behind cross-species transplantation because I believe it to be like any other step taken in life. We cannot take this concept and hide in our homes pretending it never existed. Xenotransplantation possibly harbors many answers to our current desperate needs, and for this reason, the idea should be allowed to run free, within controlled boundaries of course. I will be graduating this year from the university with an intended major in Exercise Physiology. Having a great passion for the health field I hope to attend Medical School in the Fall of 02'. Just some quick things about myself, I've worked as a Certified Nursing Assistant for 5 years, Optometric technician for 1 year, volunteered in many health related facilities, and I'm also certified in personal training. If you have any comments or questions about the article please e-mail me at: ang2L@home.com*

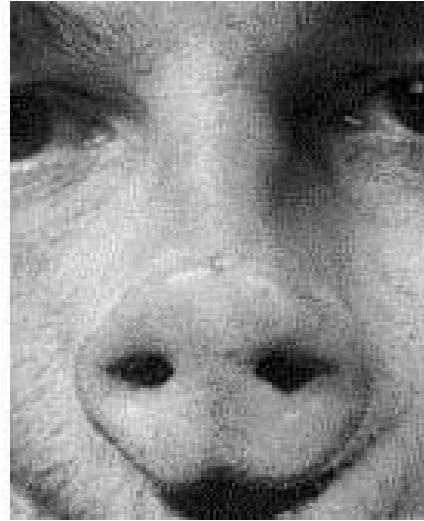


## XENOTRANSPLANTATION: AN UNNECESSARY AND UNETHICAL APPROACH TO TRANSPLANTING ORGANS

Alisha Bhatia

Xenotransplantation should not be considered an alternative to normal human organ transplants because there are too many risks involved and these drawbacks do not outweigh the benefits. It poses a threat to the health of humans everywhere because using animal organs increases the risk of releasing

deadly animal viruses into humans. It also brings about numerous, health, economic, ethical, and legal concerns, and it is not cost efficient.



Scientists have been researching xenotransplantation for almost a century and there have yet to be any significant

breakthroughs. Companies today are more attracted to the commercial aspects of the procedure so they embellish the efficiency of it to sell it. There are still several health concerns involved in xenotransplantation. Transplanting live animal organs into humans breaks down natural human infection barriers so diseases are more easily spread to humans. Viruses, such as the Macaque herpes virus in monkeys, which are harmless to animals but harmful to humans, can also be transported. These viruses also have the potential to become airborne through the common cold and cause worldwide epidemics. Pigs right now are being used for xenotransplantation, and they alone carry 25 diseases, such as swine influenza, that can infect humans. They have already infected human cells in test tube experiments. New viruses can also develop that are unknown to medicine currently.

There are also several social issues regarding xenotransplantation that concern scientists. The Department of Health and Human Services violated the Public Health Service Act by ignoring scientific evidence that proved that xenotransplantation was dangerous and ineffective. They

# Invited Opinions

passed draft guidelines on September 23, 1996, even though graft recipients were known to have suffered much harm. In passing its laws, not enough consideration was given to how the public would be protected from all the possible mishaps such as epidemics of animal viruses. The HHS also did not state how infected people would be quarantined to prevent breakouts of diseases, which have the potential to cost the US government billions of dollars.

The Food and Drug Administration has provided inconsistent support for xenotransplantation. In 1991, Sporicidin, a disinfectant, was recalled because the FDA didn't want to approve anything that might assist in transporting diseases between patients in hospitals, yet they support xenotransplantation, which has the capability to do the same thing. Federal regulation of the process as a whole is not strict enough, and it does not oversee scientists carefully enough in their experiments. Current review boards consist of low-paid workers who are apathetic to the process. The HHS claims to monitor outpatients for the rest of their lives, but this is rarely followed up on.

Aside from health and social concerns, xenotransplantation is not cost effective and it is unethical. The average transplant costs close to \$300,000, without the hidden costs of breeding, housing, feeding, medicating, and testing. Registering for a graft also costs \$250,000. The pigs that are used for xenotransplantation must also be bred in a germ-free environment. They then need to be tested to make sure they are free of any viruses. This can cost anywhere between \$25,000 and \$100,000. Only a small minority of society can afford the costs.

Some companies are attempting to breed pigs with human genes so that the organs will not be rejected once inside a human, but in doing so, they are disrupting the natural genetic

construction of the pigs. The pigs are also inflicted with large amounts of pain during the experiments. Some people believe that because pigs are killed for food, these acts are justifiable, but in trying to manipulate pig genes, scientists have also produced abnormalities in them, such as arthritis, stomach ulcers, and defective vision. Pigs are also confined to sterile experimental environments, so they are unable to behave normally.

Because of all the negative aspects of xenotransplantation, it should not be researched and pursued as an alternative to human-human organ transplantation, and there are methods to avoid its use completely. Currently, almost 50% of human organs are rejected within five years. Perfecting human-human transplants will reduce the need to resort to animal-human transplants. There is also a shortage of human organs available for donation, so improving the organization of donation agencies and seeking help from more people to become organ donors will also reduce the need for animal organs. Scientists are also looking into other methods of generating human organs for transplantation. The most promising one right now uses stem cells.

*I am a first year GPPA med student, majoring in biology and psychology. I chose to write against xenotransplantation because there were too many complications regarding the process. Few studies actually showed positive results and there are other options that can benefit humans the same way.*

small world

BY TOM BRISCOE



# Pre-Med Exclusive

*The Pre-Med Exclusive section focuses on combined degrees. This section provides interesting perspectives on the MD/PhD, MD/MPH, and the MD/MBA combined degrees.*

## Why I want to get my MD/PhD

**Gaurav D. Gaiha**

This past summer I began working in Dr. Donald A. Chambers' research laboratory at the Center for Molecular Biology of Oral Diseases studying the biological basis of stress. I began to closely examine the workings of the immune system in response to the stress hormone norepinephrine. Even in such a strictly defined topic area, there was so much to explore. The more I explored, the more I became intrigued.

While beginning experiments on my first project, I came to an important realization: science was no longer the trite memorization of facts. Instead, it transformed into a challenging thought process that required knowledge, creativity, and tenacity. It was at that point that I began to realize my intentions to pursue an MD/PhD.

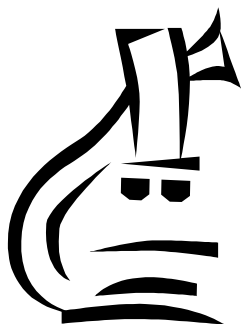


Even at a young age, I knew I wanted to become a physician. But solely engaging in a clinical practice would not quench my newfound passion for research. Medicine is fascinating. I have watched my father perform life-saving procedures first hand, but I have also seen him grow accustomed to

a life of routine. Up to a certain point, I feel that medicine no longer challenges one's ability to think and innovate as it does one's ability to manipulate fine instruments and follow technical instructions. A part of my desire to pursue an MD/PhD stems from this limitation in medicine.

My experience in the lab has shown me that research imposes a unique burden upon the individual. However, in this case, it is a burden that grants us the opportunity to think, innovate, create, hypothesize, and be instrumental in changing and shaping the science that medicine is based upon.

As many of us know, doctors can fight disease in a variety of ways. Intervention may range from complex, invasive procedures to the administering of highly potent drug cocktails. With the completion of the Human Genome



Project, I believe that medicine will soon appear more and more like the latter.

As our understanding of human biochemical processes grows, so will the development of specific medicines designed to counter the ill effects of genetic defects. Thus, I feel that as a future physician and future medical scientist, it is essential to understand the cellular basis of disease.



As a physician, I intend to do everything possible to insure the good health of my patients. I believe that will be my duty. But as a researcher, I feel I am required to do everything I can for my generation and for the human race as a whole. Personal interaction

is important and satisfying; it is the basis of our medical system. But the system would not survive without the broad scale contributions of medical scientists. They provide the intellectual tools by which physicians perform their art.

Gradually over the course of the school year, I have been able to determine that I would like to pursue a PhD in Biochemistry and a MD in Infectious Diseases/Immunology. This will hopefully give me the ability to contribute to our understanding of the biochemical interactions between the immune system and disease. Through this career, I aspire to make serious advances in our fight against cancer, stress related illnesses, and heart disease. It is my hope that more physicians will choose to join me in our mutual quest to improve our current methods of treatment.

*Gaiha is a sophomore majoring in Biochemistry and Economics. He is actively involved in molecular biology research and community service.*

# Pre-Med Exclusive

## The Business Side of Medicine: *MBA and MD*

Shruti Mehta

Corporate Finance, Operations Management, Community Health —What do these classes have to do with a medical school curriculum? These classes make up just a small fraction of the myriad of business classes that are available to students pursuing an MBA (Masters in Business Administration) or MPH (Masters in Public Health). Jay Shah is a GPPA Medicine student currently pursuing an MBA, with concentrations in Finance and Health Care Administration. He is currently in his second semester of MBA classes, and he plans to finish his degree by concurrently taking MBA classes while attending the UIC Medical School.

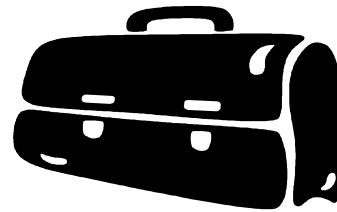
Shah's decision to pursue an MBA has been influenced by several factors. Shah's future plans as a physician include running and managing his own private practice, as well as eventually running a private hospital. He is very interested in the economic aspect of running a successful practice, and he is well aware of the increasing importance of being knowledgeable of business and legal issues as they relate to the field of healthcare. With a large emphasis placed upon real world application, Shah believes that his experience in his classes thus far will prove to be extremely useful.



Shah believes, "A large part of the current trend in healthcare consists of utilizing limited resources to bring the best quality healthcare to a maximum number of people, making financing, marketing and management skills invaluable to running a successful, efficient, and cost-effective practice." These types of skills are given primary importance in the experience-oriented MBA and MPH classes, which stress, above all, the necessity of not only knowledge of economic and business theories, but also the attainment of interpersonal skills. For example, Shah's Management class dealt primarily with the various methods used to communicate effectively with other physicians and health administrators, patients, insurance companies, and employees.

The MBA and MPH classes differ in their areas of focus. The MBA program is concerned primarily with the management of a private business, consumer marketing tactics, and general

economic theories. There is a greater emphasis on strategic marketing and group interaction. The MPH classes, by comparison, deal primarily with government health policies and community health strategies; for example, how public



health departments can assess and effectively deal with public health issues, and how to develop and administer programs to control public health problems. Shah, who is pursuing an MBA with a concentration on

Healthcare Administration, feels that he is able to get the "best of both worlds." Shah's completed and current MBA classes include Managed Care, Public Health and Law, Governmental Public Health, Community Health, Corporate Finance, Investments, Financial Accounting, Marketing, Organizational Behavior, and Operations Management. Not only does he value the skills stressed regarding economic and business practices, he is also developing skills useful when relating business, economics, and law to healthcare.

In addition to the valuable management and economic knowledge and skills developed in the MBA and MPH programs, Shah values the personal benefits that he reaps from these classes. These benefits include experience and expertise in investment, analytical skills, and communication skills, to name a few — skills that are directly applicable to virtually any field. "With the experience I will gain from my MBA classes, I know I will be able to apply what I have learned to whatever I do in the future, as a physician and in my private life."

*Mehta is a third year GPPA Medicine student majoring in English Literature. Next semester, she will be continuing her studies in English Literature at Oxford University. She is also involved with the Society of Future Physicians and teaches aerobics.*

# Pre-Med Exclusive

## Obtaining your MPH

Minesh Shah

You've seen it on television, you've seen it in the movies, and who knows, you might have even dreamed of it. A surgeon performs a heroic, miraculous surgery that saves a young girl from the clutches of death. Afterwards, the parents of the child offer endless words of gratitude to the surgeon, while the girl vows to dedicate her life to medicine in honor of the physician who saved her. The surgeon later reflects on the moment, saying to a colleague, "You know, this job isn't about the money or the prestige or the lifestyle, it's all about hearing that 'thank you'."

What if you could do what this surgeon did on a much greater scale? What if you could save the lives of 1,000 people with one decision? What if you could save an entire community from catching a deadly infectious disease? Would you do it? Of course you would. But there's one catch – there's no "thank you." The people whose lives you would have saved don't know who you are nor have they ever heard of you. Since they never got sick, they don't even know that their lives were saved. In fact, you don't even know exactly how many lives were spared. Although the surgeon may say she would give up the money, prestige, and the lifestyle, you don't have that choice because you were never offered it in the first place. Would you still pursue this profession?

If you're still here with me, then I'd like to introduce you to the career just described: public health. There is no perfect definition for public health, so I will attempt to describe it as an idea rather than a career or a discipline. Public health is the idea of caring for the unspecified and unidentified – the stranger. What does this mean? This means that the benefits of public health affect everybody, yet nobody in particular. An alternative to the stranger is the distinct, identified individual. An example of such a person is the girl who was saved by the surgeon. This is the person who we can see, who we can touch, who will thank us, and who will no longer be a stranger.

The public health approach is based on improving the health of a community through prevention. Thus, the nurse who organizes an immunization program is practicing public health. The lawyer who sues a corporation dumping toxic chemicals into a river is practicing public health. The physician who holds weekend seminars teaching weight loss



techniques, cancer self-exams, and stress management is practicing public health. The advocate who convinces congressmen to stand up to the tobacco companies is practicing public health. The teacher who teaches his students about violence prevention and conflict resolution is practicing public health. Whose lives will be saved from these interventions? We don't know.

If we don't know who's being saved, how do we know public health works? Public health is based on the science of epidemiology, which is the study of populations, and specifically, how disease affects populations. Through epidemiology, the success of public health interventions on a community's health can be known. Public health's early successes involved preventing the spread of infectious diseases, maintaining clean air and water, and preventing injuries. Were they successful? Well, in the 20<sup>th</sup> century, the average American's life span was increased by thirty years. Twenty-five of those years are due to public health efforts, while only five are due to medicine.

PUBLIC HEALTH IS THE IDEA OF  
CARING FOR THE UNSPECIFIED AND  
UNIDENTIFIED — THE STRANGER.

Those of you reading this journal might want to be future physicians. In time, some of you will enter medical school, whereas some of you will find that medicine really isn't right for you. Both groups can benefit from a public health education.

For the future physicians, public health will provide the larger perspective on how your work fits into the big picture. It will also guide you in your career as to how to make the greatest impact possible through your work. It will teach you to be critical of your professional colleagues, and remind you of why you wanted to be a physician in the first place. For those of you who eventually decide not to go to medical school, public health is your way to still impact the health of people, and on an even larger scale than a physician would be able to. It will also open the doors to exciting careers that you may have never thought existed.

What I wanted to convey in this article is why I believe in the idea and principles of public health. In my view, it is a field that embodies the truest aspects of compassion, hope, and community. I believe there is a great difference between the public health courses I have taken last year and the medical school courses I'm now taking. Not to insult my current colleagues, but there is a feeling of love and optimism in public health which is present to a lesser extent in medicine. Don't take my word for it, try a course.

# Research

## Doctor Squared

Julie Sadhu

Ask pre-med students why they chose medicine and you'll probably get the predictable response, "I want to help people." That's nice, but that doesn't really tell you much. How they plan on fulfilling this goal is more interesting and reveals more about the individual. For some, the dream is solely clinical medicine, personal interaction with patients on a daily basis. For others, helping people encompasses the world of the laboratory: research. If you fall into the latter category, it would be advisable that you not only pursue your medical degree, but a PhD as well. The president of UIC's MD/PhD Students' Association, Brenton Mar, shares some tips and insights on MD/PhD programs and comments specifically on what UIC offers.

Brenton graduated from UCLA with a biochemistry degree and is currently pursuing his PhD in molecular genetics here at UIC. He is a third-year MD/PhD student working in a Hematology/Oncology lab under the direction of Dr. Carol Westbrook. Brenton chose to apply to an MD/PhD program because he loved research and its challenges. He was really fascinated by it, wanted to solve problems, teach, and to treat patients. As he explained, "An MD/PhD gives a person a lot of options."

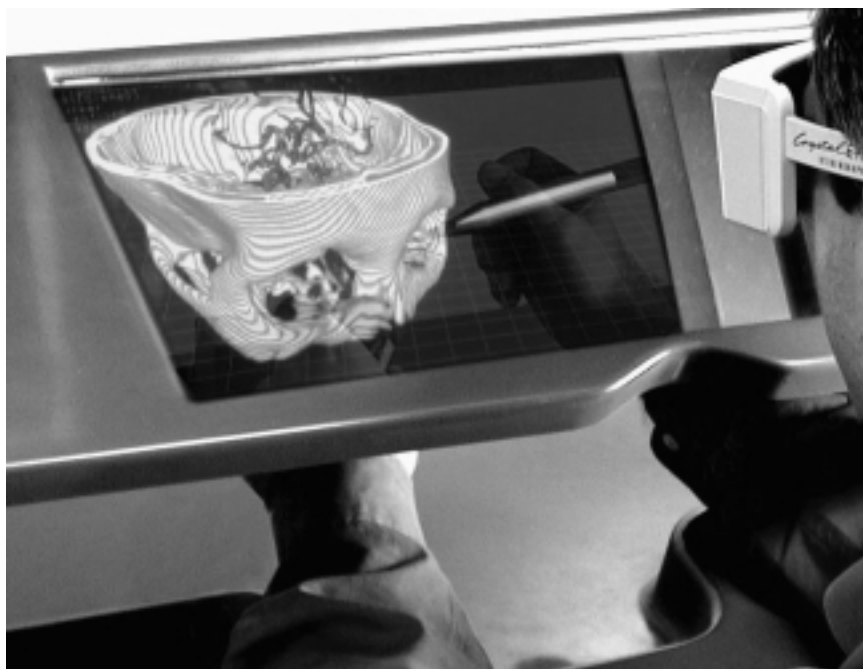
According to Brenton, when looking at MD/PhD programs, students should make sure they are willing to live in the city or town in which the school is located. They should enjoy the atmosphere and environment of the school because they

will be spending 7-9 years at that campus. He recommended that students interested in research as a career pursue a combined degree. The degree is more desirable than solely a PhD because it provides a broader, more clinical understanding of research. In addition, it surpasses simply an MD because it provides better training, more intensity and valuable experiences writing your own thesis. Brenton also thinks it makes you a better scientist. The advantages of such a degree include more integrated training, and an opportunity to see both clinical and basic science. In addition, students in MD/PhD programs receive a stipend and fee waiver. The main disadvantage however is the program's length.

Some schools have a similar program called the MSTP (Medical Scientist Training Program). What distinguishes an MSTP from other MD/PhD programs is that the MSTP is an NIH nationally funded program. Highly regarded institutions with outstanding MD/PhD programs receive this recognition from NIH and funding to make the program better and more prestigious.

To students considering MD/PhD programs, Brenton recommends you make sure that you definitely want to go into research. Prior research exposure during the undergraduate years, while not necessary, definitely helps. In addition, in looking for a research mentor, you should look for someone with whom you get along, from whom you can learn a lot, and with whom you can talk easily.

For more information about UIC's MD/PhD Program, visit <http://www.uic.edu/com/mdphd/>.



**MD/PhD students use cutting-edge technology in their research endeavors. As one of the nation's 88 leading research institutions, UIC is dedicated to supporting the innovative research of both its faculty and its students.**

# Research

## Screening for Coronary Artery Disease

Milad Nourahmadi

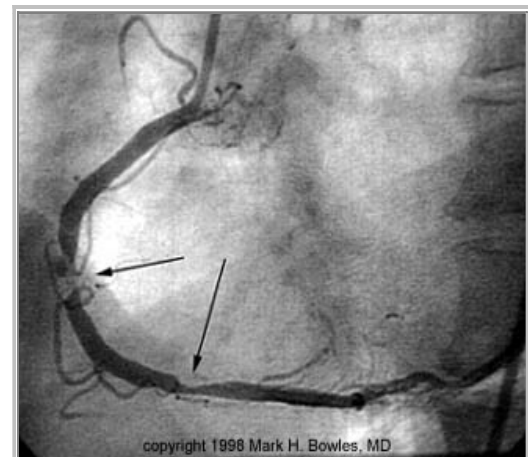
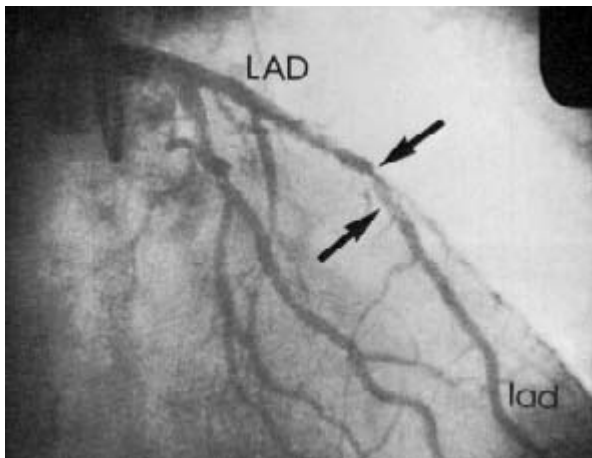
Heart disease is the leading cause of death in both American men and women, totaling more deaths than from all cancers combined! It has been said that an ounce of prevention is worth a pound of cure. With diseases such as heart disease where no cure exists, prevention may be even more valuable. Currently, UIC researchers are working to help reduce the morbidity and mortality due to heart disease through early detection. One of the advanced technological medical systems in use by UIC researchers is electron beam tomography, an x-ray based technology that allows the coronary arteries to be imaged. It is possible to take “still” pictures of the beating heart because images are obtained in one-tenth of a second; compare this to other imaging modalities which usually take one to two seconds. UIC obtained the second Ultrafast CT scanner ever made, and has used it in the study of screening for coronary artery disease (CAD). The screen detects calcium in the coronary arteries. Calcification is a marker for CAD and forms when atherosclerotic plaque, which is caused by many factors

**...an ounce of prevention is worth a pound of cure...**

ranging from fatty foods in the diet to genetic predisposition, builds up in the arteries and stabilizes. If allowed to progress, plaque can cause narrowing of vessel diameter, bring about changes in blood flow, and cut off the blood supply to the wall of the heart, causing a myocardial infarction, better known as a “heart attack”.

Data collected from over 40,000 individuals who have undergone the heart scan is currently being analyzed. UIC researchers are looking for associations between the development of CAD symptoms, risk factors, and the level of calcification. Each semester, undergraduate students take part in the research process by helping to incorporate patient demographics and risk factors into the Coronary Artery Calcium (CAC) database. The research is

still underway and will be completed in the near future. Although the test cannot fully predict the time and date of impending cardiovascular events, it has shown promise in predicting the future onset of disease. Results of this research will greatly increase the knowledge of significant relationships between factors that can lead to CAD. The results will also increase the awareness of preventive measures that will help to reduce the number of unnecessary deaths resulting from heart disease.



In the catheterization image on the left, LAD refers to the left anterior descending coronary artery. The arrows point to sections of the lad narrowed by coronary artery disease. The arrows in the image on the right indicate narrowed and blocked sections of the right artery. More than 95 percent of all coronary artery disease is due to cholesterol and calcium deposit collection.

# Research

## Research Internship Opportunities

Have you thought about the possibility of conducting research or getting involved in an internship over the summer or after graduation? Below are some of the many opportunities available in the United States. For more information, visit the indicated websites and/or contact Beth Powers in the Office of Special Scholarship Programs, (312)355-2477, [bpowers@uic.edu](mailto:bpowers@uic.edu).

**American Bar Foundation**  
**National Library of Medicine Research Participation Program**  
**American Cancer Society Cancer Research**

**Arizona State University Summer Internship**  
 For undergraduates to experience independent research projects.

**Baylor College of Medicine**  
<http://www.bcm.tmc.edu/smart/>  
 Ten-week Summer Medical and Research Training (SMART) Program. Students are matched with mentors. Research areas include biochemistry, biomedical engineering, biotechnology, cardiovascular sciences, cell biology, computational biology, developmental biology, gene therapy technology, immunology, neurosciences, nutrition, pediatrics, pharmacology, physiology, structural biology, and virology.

**University of California, San Francisco**  
<http://www.ucsf.edu/srtp>  
 Focus on biological and biomedical sciences. Oriented for students seeking PhD degrees and academic careers as professors, scholars or researchers in health insurance. Must have research experience, completed sophomore year and taken core sciences.

**Cold Spring Harbor Laboratory**  
<http://www.cshl.org/admin/pubaff/URP.html>  
 Sophomores and juniors. Research in molecular biology, cell biology, neurobiology, and plant biology.

**Colgate-Palmolive**  
 Juniors and seniors to learn within a corporate setting. Research under mentor. Open to students majoring in chemistry, biochemistry, life sciences, polymer science, chemical engineering, mechanical engineering, and packaging engineering.

**Congressional Fellowship Program**  
<http://www.acs.org>  
 Provides opportunity to work in the office of a U.S. senator

or representative or congressional committee and gain first-hand knowledge of the operation of the legislative branch of the federal government.

**Congressional Hispanic Caucus Institute Inc.**  
**Hispanic Leadership Development Programs Fellowship Program**  
<http://www.chci.org>  
 Undergraduate and graduate students interested in public policy have opportunity to work hands-on in Washington D.C. Areas offered include international affairs, law, women's issues, children's issues, education, media, etc. Telecommunications and health administration also offered.

**University of Connecticut Health Center**  
<http://www.uhc.edu>  
 Undergraduate research for those who completed sophomore year and interested in pursuing their PhD in biological and biomedical science. Research in molecular, cell and developmental biology, etc.

**University of Connecticut**  
<http://www.it.uhc.edu/HPPT/>  
 Research for those pursuing careers in medicine, dental medicine, or biomedical research.

**Cornell University Minority Premedical Students**  
 Must have completed the first semester of junior year and have completed courses in biology, general chemistry, organic chemistry, and physics.

**Coro Midwestern Center Coro Fellows Program in Public Affairs**  
<http://www.coro.org>  
 Nine-month experimental graduate level program in areas such as government agencies, political campaigns, community-based organizations, labor unions, media organizations, and businesses.

**Fred Hutchinson Cancer Research Center**  
 Undergraduates interested in a career in biological research. Topics include cellular and developmental biology, oncogenes, molecular immunology, molecular biology, membrane biology, genetics and virology.

**Hartford Hospital**  
 Pre-medical students who have completed their junior or senior year. Introduce to research methodology, patient treatment, and ethical issues in medicine.

# Research

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## Harvard School of Public Health

<http://www.hsph.harvard.edu/Academics/dbs/index.html>

Minority undergraduates during the summer following their sophomore or junior year. Laboratory research focused on clinical and basic scientific investigation aimed at disease prevention.

## John F. Kennedy Space Center—NASA

Students interested in life sciences, bioengineering, or related fields. Participants gain insight into how space life sciences flight experiments are conducted, as well as explore current and future research opportunities.

**Louisiana State University Medical Center Department of Biochemistry and Molecular Biology in the Medical Center**  
Sponsors sophomore and junior students.

## Massachusetts Institute of Technology

Minority students interested in engineering, genetics, physics, math, computer science, and toxicology.

## Mayo Graduate School

Must have completed 2 years of college. Areas of research include biochemistry, biomedical imaging, immunology, molecular biology, molecular neuroscience, pharmacology, and physiology.

## University of Michigan

[http://www.biology.1sa.umich.edu/~rhume/rsf\\_rtg/nsf\\_rtg.htm](http://www.biology.1sa.umich.edu/~rhume/rsf_rtg/nsf_rtg.htm)

Undergraduate fellowships in Developmental Neurobiology to students interested in research careers in the study of developing neural systems.

## University of Minnesota

[http://www.cbs.umn.edu/summer\\_research/](http://www.cbs.umn.edu/summer_research/)  
Undergraduate program for those who have completed 2 years of basic work course in biology, chemistry, and physics. Student's work in Life Sciences operates in laboratory or field sites.

## Minority Leaders Fellowship Program National Library of Medicine Student Research Participation Program

Postgraduates, students, and faculty have opportunity to participate in research and development programs and have access to on-site resources and facilities in fields such as computer science, health care, library science, medical education, medical informatics, and related disciplines.

## Mount Desert Island Biological Laboratory

<http://www.mdibl.org>

Research fellowships for undergraduates.

## National Institute of Environmental Health Sciences (NIEHS) Program

For those pursuing studies in disciplines related to biomedical research. Gives opportunity in research laboratories under the direction of a scientist.

## National Institute of Health (NIH)

<http://www.training.nih.gov>

Program in Biomedical Research places students in one of the NIH research laboratories. Students also attend the NIH Summer Seminar Series. Institutes include National Cancer Institute, National Institute on Aging, National Institute of Mental Health, and many more.

## National Science Foundation, Division of Biological Sciences Research for Undergraduates (REU)

Specific sites provide undergraduates with research experiences during the summer.

## University of North Carolina, Chapel Hill Undergraduate Research

Experiences offer students independent research in molecular biology under the supervision of a faculty mentor.

## University of Pittsburgh

Departments of Biological Sciences, Neuroscience, and Chemistry offer a summer undergraduate research fellowship program through the Howard Hughes Medical Institute. Participants engage in original research under the guidance of a faculty member. Applicants should be contemplating research careers in the molecular and cellular aspects of the biological sciences.

## University of Rochester

<http://www.urmc.rochester.edu/smd/scrc>

The School of Medicine and Dentistry offer program for undergraduate and medical students. Student's work in The Strong Children's Research Center (SCRC), which supports basic and clinical research directed toward disease in infants, children, and adolescents. Also studies of developmental biology, child and adolescent development.

## Worcester Foundation for Experimental Biology

Students in biology, cellular biology, genetics, and biomedical science.

# Graduating Editors

## Editors-In-Chief

**George Nijmeh**



I have truly enjoyed serving as a Co-Editor-In-Chief of the Pre-Med Journal for the last two years. What I enjoyed most was helping to restructure the journal so that it was more of a team effort. I enjoyed being able to work with the other staff

members to complete an issue we could be proud of and that our readers could enjoy. It taught me a lot about myself and required me to employ skills I would have never known I possessed. I will always remember Mona's habit of constantly writing herself notes and reminders. I finally caught on, and this helped us to keep things organized and running smoothly. I will graduate this year with a degree in Biological Sciences and minors in Mathematics and Chemistry. This fall I will be attending the UIC College of Medicine. I wish Michelle, Jane, and the rest of next year's staff lots of luck.

**Monica Oberoi**



Journalism has always been a passion of mine, so having the chance to combine my undergraduate studies in pre-medicine with journalism was a dream come true! I have been part of the Pre-Med Journal since freshman year. As a Co-Editor-in-Chief, it has been exciting to watch the journal transform from a one-person effort to an entire

staff project. While meeting deadlines was stressful, it has always been an honor to work with the other student and faculty staff members. I will always remember the times that George and I struggled with fixing the honors college computer as the deadline was quickly approaching! I will be graduating from UIC with a Bachelor of Science in Biology. Hopefully, all the knowledge I have gained from the journal will come in handy next year as I attend Northwestern University Medical School. I wish next year's Editors-in-Chief, Michelle Gentile and Jane Jih, luck with continuing to establish the journal.

**Ninad Shah**



I was an editor of the Features section for one issue and an editor of the News section for the following two issues. I really enjoyed working for the journal this past year and a half. It was fun meeting new authors and always scrambling to meet the journal's deadlines. The biggest

hurdle my coeditor, Tayyaba, and I had was simply arranging a time to meet to do our work. She was always very busy, and invariably, I would forget about some meeting we had planned. Fortunately, everything always seemed to work out for us. After I graduate at the end of this semester (with a degree in Biological Sciences), I plan to attend medical school. The odds are that I will attend some Chicago school – hopefully Northwestern University Medical School.

## News

**Tayyaba Syed**



It has been an awesome experience being a part of the journal for the past two issues. I definitely recommend everyone to at least apply for an editor's spot on the journal. You get to boss writers around and make the journal look pretty with your unique section

layouts. It could not get better than that! I was also fortunate enough to get a cool co-editor who was not lazy. However, Ninad needs to realize that the point of having a cell phone is to answer it every now and then. It was so hard for us to get in touch and meet up, but whenever we did we got so much done without any hassles. Thanks, Ninad, for being so understanding with my inconvenient schedule and just being so easy to work with. As for me, my plans for the fall are still up in the air. I am just glad I got to edit a section of the journal this year. Thanks to all our exceptional writers and Mona and George for being wonderful chiefs!

## Features



### Shimoni Kadakia

I am a psychology major with biology and chemistry minors. During the past two years with the journal, I have been an editor for the Pre-Med Exclusive and Features section. From my experiences, I have learned a lot about both journalism and the medical field, and most importantly,

to always save my work. I plan on attending medical school this fall to eventually become a neonatologist. Reflecting back on my undergraduate years, I will never forget all the crazy times I had with my friends.

## Invited Opinions

### Shuchi Patel



I have been involved with the Pre-Med Journal for three years. I have been writing articles and am currently the section editor of the invited opinions section. The journal has been continuously improving, and I really enjoyed seeing the increasing involvement

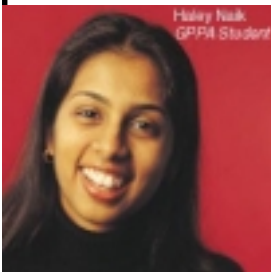
and reading the various opinions that I received about the chosen topics. I will be starting medical school this August with an undergraduate major in biology and will have a masters in biochemistry.

### Haley Naik

As a Fulbright recipient, I plan to pursue immunogenetics research at Oxford University this upcoming year. After completing my bachelor's in biochemistry, this summer I hope to do some traveling while I'm still young and excited about roughing it. The best part

of doing my undergrad at UIC for me was the diversity of the student body and the ability to affect change on campus when I saw a need for it— from helping to make the Premed Journal a biannual publication to lobbying for an Asian American Studies program to stressing the importance of undergraduate

research as a significant university initiative at UIC. My one piece of advice is this: take your time and take lots of classes outside your major — music, literature, math, ethnic studies, history, art, sociology — they will really enrich your life.



## Research

### Trushar Naik



After three years at UIC, I have a degree in Economics with a minor in Biology. I aim to follow my dream of becoming a doctor through medical school, beginning in the upcoming year. I urge you all to make the most of your time, here in college, and beyond. By the way, Haley and I are NOT related. As a

matter of fact, we successfully completed two sections of the journal without even meeting much!

# Class of 2001

# Article Submission Policy

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At this time we are open to any and all articles which are related to either medicine or pre-med students. For further information on article topics, please refer to the Pre-Med Journal Mission Statement on the bottom of this page. If you are a pre-med student, write the kind of article you would enjoy reading and find informative and helpful. The UIC Pre-Med Journal prefers articles written by UIC students and faculty; however, it is important to have open channels of communication in the sciences and academics in general. For this reason, we invite students and faculty from other colleges, medical schools, and even high schools to submit an article they would like considered for publication.

**Information for Authors:**

With any publication of this nature, some general rules must be established to make the production aspect more efficient as well as provide a sense of consistency. Please follow these rules when writing for the Journal:

Two typed double-spaced copies should be submitted along with a Submission form (obtained online) which has the author's name, address, phone number and email address. Other pertinent contact information should also be included. The UIC Pre-Med Journal also requires an electronic copy of the article. It can be submitted via disk or email. If your article has diagrams, pictures, or other graphics those should also be included on the diskette. The articles should be accurate and carefully proofread. References should be cited when necessary. In articles which quote live sources, a Source Approval form (obtained online) must accompany the article.

The Journal is free to make any changes it feels necessary. Submission does not guarantee publication nor return of article, whether published or not. Articles should be submitted by indicated deadlines. The Journal may also choose to excerpt only certain portions of your article. The Journal does not accept responsibility for anything written by any independent author or any member of the UIC Pre-Med Journal Staff.

Articles must be submitted unfolded in a large envelope to the following address:

U.S. or Campus Mail  
 UIC Pre-Med Journal  
 University of Illinois at Chicago  
 Honors College (M/C 204)  
 828 S. Halsted  
 121 Burnham Hall  
 Chicago, IL 60607

or you can email a plain text article to:

premedj@uic.edu

## Student Writers Wanted

The UIC Pre-Med Journal is looking for student writers for Fall 2001 for all sections, especially the new Literary Section.

Requirements include good writing skills, ability to meet deadlines, and interest in health care, medicine, research, the natural sciences, communications, and the social sciences and humanities as they relate to medicine and health care.

For more information, e-mail premedj@uic.edu. Include name, e-mail address, year in school and major or planned course of study. Any other information that you would like to provide is welcome!

### MISSION STATEMENT:

*The UIC Pre-Med Journal is an information resource for pre-medical students as well as for students planning to enter all other health professions and sciences. In order to help students pursue careers in the health professions, we dedicate this journal to making vast resources readily accessible to them. These resources include information about ongoing research at the University, legal and ethical issues faced by healthcare providers, important events in the field of healthcare, and also any other information pertinent to a pre-health student. The UIC Pre-Med Journal strives to inform students accurately about the healthcare profession from various angles. The Journal may serve as a means for students and faculty to express concerns, present concepts, and, most importantly, exchange ideas.*