



STANLEY CHIANG

★
NAME: STANLEY S. CHIANG
AGE: 18
HOME: GREAT NECK, NY
INVENTION: DEVICE TO COUPLE MULTIPLE FLUX STATES OF A QUANTUM BIT
SCHOOL: HARVARD UNIVERSITY


DURING HIGH SCHOOL, STANLEY HAD TIME TO PLAY ON THE VOLLEYBALL TEAM AND ENJOYED PLAYING TENNIS. AT HARVARD HE JOINED THE CREW TEAM.



HIS SCIENCE TEACHER, MR. ALAN SCHORN, HELPED HIM GET A SUMMER INTERNSHIP IN 2003 DOING A PROJECT ON FASTER DNA CHARACTERIZATION BY ELECTROPHORESIS.



IN 2004, HE COMBINED HIS TWO INTERESTS, APPLIED PHYSICS AND SUPER CONDUCTIVITY IN A STUDY OF QUANTUM BITS, THE UNIT OF MEMORY IN A "QUANTUM COMPUTER." A QUANTUM COMPUTER SHOULD BE MANY TIMES FASTER AND MORE POWERFUL THAN TODAY'S COMPUTERS.



HE DEVELOPED A DEVICE WHICH WILL ALLOW A QUANTUM BIT TO BE "READ" BY COUPLING IT TO ANOTHER QUANTUM BIT. THIS IS A FIRST STEP IN MANY NEW TECHNOLOGIES NEEDED TO CREATE A PRACTICAL QUANTUM COMPUTER.

THIS WORK WAS AN INTEL SCIENCE TALENT SEARCH FINALIST, SIEMENS-WESTINGHOUSE SEMIFINALIST AND STANLEY WAS ON THE USA TODAY USA ACADEMIC FIRST TEAM.

STANLEY IS LOOKING FORWARD TO ANOTHER RESEARCH PROJECT THIS SUMMER, POSSIBLY OVERSEAS. LIKE MANY COLLEGE FRESHMAN, HE IS UNDECIDED ON HIS CAREER PATH.



AMARDEEP GREWAL

RAN LI

NAME: AMARDEEP GREWAL
AGE: 16
HOME: WEST BLOOMFIELD, MI
SCHOOL: DETROIT COUNTRY
DAY SCHOOL

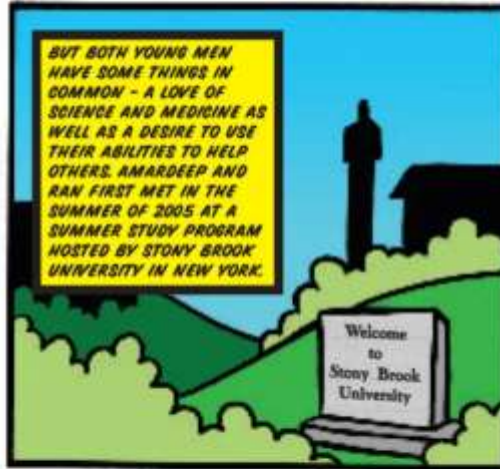
NAME: RAN LI
AGE: 17
HOME: VALLEY STREAM, NY
SCHOOL: VALLEY STREAM CENTRAL
HIGH SCHOOL

INVENTION: A NEW SPIN ON WOUND HEALING SCAFFOLDS

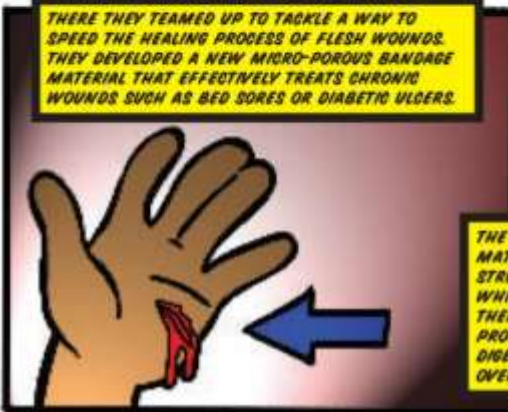
AMARDEEP GREWAL AND RAN LI ARE VERY DIFFERENT INDIVIDUALS. AMARDEEP IS A CROSS-COUNTRY RUNNER, AND RAN IS AN ACCOMPLISHED VIOLINIST. AMARDEEP LIVES IN MICHIGAN AND IS FLUENT IN PUNJABI, WHEREAS RAN LIVES IN NEW YORK AND IS FLUENT IN CHINESE.



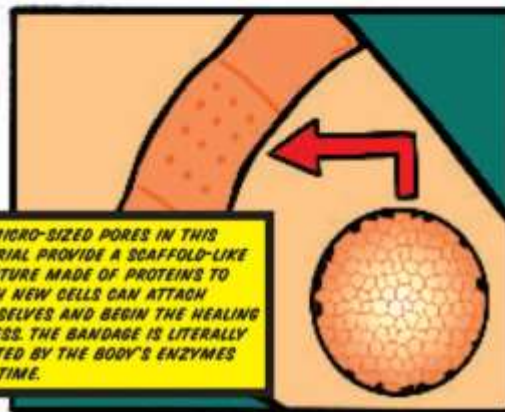
BUT BOTH YOUNG MEN HAVE SOME THINGS IN COMMON - A LOVE OF SCIENCE AND MEDICINE AS WELL AS A DESIRE TO USE THEIR ABILITIES TO HELP OTHERS. AMARDEEP AND RAN FIRST MET IN THE SUMMER OF 2005 AT A SUMMER STUDY PROGRAM HOSTED BY STONY BROOK UNIVERSITY IN NEW YORK.



THERE THEY TEAMED UP TO TACKLE A WAY TO SPEED THE HEALING PROCESS OF FLESH WOUNDS. THEY DEVELOPED A NEW MICRO-POROUS BANDAGE MATERIAL THAT EFFECTIVELY TREATS CHRONIC WOUNDS SUCH AS BED SORES OR DIABETIC ULCERS.



THE MICRO-SIZED PORES IN THIS MATERIAL PROVIDE A SCAFFOLD-LIKE STRUCTURE MADE OF PROTEINS TO WHICH NEW CELLS CAN ATTACH THEMSELVES AND BEGIN THE HEALING PROCESS. THE BANDAGE IS LITERALLY DIGESTED BY THE BODY'S ENZYMES OVER TIME.



FOR THEIR ACCOMPLISHMENT, AMARDEEP AND RAN WERE AWARDED FIFTH PLACE IN THE TEAM DIVISION IN THE 2005 SIEMENS WESTINGHOUSE SCIENCE & TECHNOLOGY COMPETITION.

AFTER GRADUATION, AMARDEEP PLANS TO EARN A DEGREE IN BIO-MEDICAL ENGINEERING, AND RAN PLANS TO PURSUE A CAREER AS A DOCTOR AND RESEARCHER.



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NAME: RYAN M. HARRISON
AGE: 18
HOME: BALTIMORE, MD
SCHOOL: JOHN HOPKINS UNIVERSITY
INVENTION: A NOVEL APPROACH TO MODELING
PH-SENSITIVE REGIONS WITHIN PROTEINS

RYAN HARRISON

RYAN'S INTERESTS ARE DIVERSE: WRITING POETRY, HIKING, AND THEATER. IN HIGH SCHOOL, HE STARTED THE PHILOSOPHY CLUB AND PLAYED TRUMPET IN THE BAND. IN HIS FIRST YEAR IN COLLEGE, HE HAS DONE SOUND AND LIGHTING DESIGN FOR PLAYS AND EVEN DIRECTED ONE. HE HAS BEEN ACTIVE IN THE BLACK STUDENT UNION AND WRITTEN FOR THEIR MAGAZINE, PERSPECTIVE.

THE EFFECT OF PH (ACIDS OR BASES) ON THE SHAPE OF PROTEINS PLAYS A MAJOR ROLE IN MANY CELLULAR FUNCTIONS. FOR EXAMPLE, THE FLU VIRUS ENTERS CELLS BY CAUSING A CHANGE IN THE STRUCTURE OF THE CELL WALL BY CHANGING THE PH AT THE POINT OF ATTACK.

IN ORDER TO GAIN A BETTER UNDERSTANDING OF THIS PROCESS, RYAN WORKED TO IMPROVE ROSETTA, A COMPUTER SIMULATION WHICH PREDICTS THE SHAPE AND CONFORMATION OF PROTEINS. THE PROGRAM CAN NOW AID RESEARCHERS IN VISUALIZING CHANGES IN PROTEIN CONFORMATIONS AS THE PH CHANGES.

IT CAN ALSO PREDICT HOW ONE PROTEIN CHANGES THE STRUCTURE OF ANOTHER AS THEY APPROACH ONE ANOTHER.

THIS WORK WON 5TH PLACE IN THE 2005 INTEL SCIENCE TALENT SEARCH.

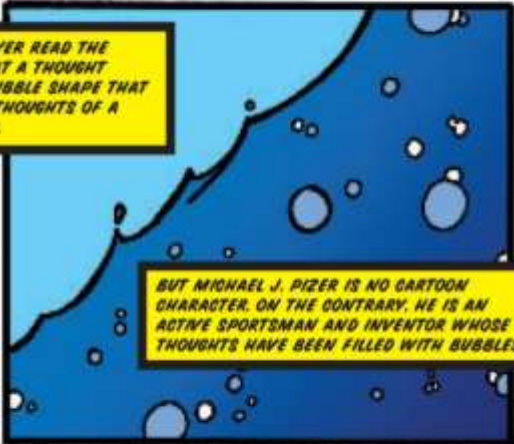
RYAN IS CURRENTLY PURSUING A DOUBLE MAJOR IN BIOMEDICAL ENGINEERING AND ECONOMICS. HE PLANS TO CONTINUE RESEARCH THIS SUMMER IN THE CORNELL/ROCKEFELLER/SLOAN-KETTERING MD/PHD SUMMER PROGRAM.

NAME: MICHAEL J. PIZER
AGE: 17
HOME: KOHLER, WI
SCHOOL: UNIVERSITY SCHOOL
OF MILWAUKEE
INVENTION: CONSUMABLE OIL
ENCAPSULATED SPHEROIDS (COES)

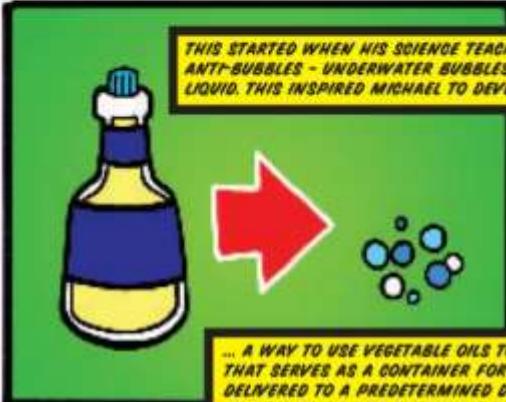
MICHAEL PIZER



ANYONE WHO HAS EVER READ THE COMICS KNOWS WHAT A THOUGHT BUBBLE IS. IT IS A BUBBLE SHAPE THAT IS FILLED WITH THE THOUGHTS OF A CARTOON CHARACTER.



BUT MICHAEL J. PIZER IS NO CARTOON CHARACTER. ON THE CONTRARY, HE IS AN ACTIVE SPORTSMAN AND INVENTOR WHOSE THOUGHTS HAVE BEEN FILLED WITH BUBBLES.



THIS STARTED WHEN HIS SCIENCE TEACHER INTRODUCED MICHAEL TO ANTI-BUBBLES - UNDERWATER BUBBLES THAT ARE MADE OF AIR AND CONTAIN LIQUID. THIS INSPIRED MICHAEL TO DEVELOP...



... A WAY TO USE VEGETABLE OILS TO CREATE A BUBBLE-LIKE SHELL THAT SERVES AS A CONTAINER FOR CHEMICALS THAT CAN BE DELIVERED TO A PREDETERMINED DEPTH IN WATER. THESE COULD BE USED TO DELIVER CHEMICALS FOR WATER TREATMENT OR NUTRIENTS FOR MARINE LIFE AT SPECIFIC DEPTHS.



MICHAEL'S INVENTION OF COES (CONSUMABLE OIL ENCAPSULATED SPHEROIDS) WAS AWARDED BEST IN CATEGORY AT THE 2005 INTEL SCIENCE & ENGINEERING FAIR, THE 2005 INTEL FOUNDATION ACHIEVEMENT AWARD, 2ND PLACE IN PHYSICS IN THE 2004 INTEL SCIENCE & ENGINEERING FAIR, AND THE 2004 U.S. NAVY & MARINE SCHOLARSHIP.

AFTER GRADUATION FROM HIGH SCHOOL, MICHAEL WILL ATTEND PRINCETON WHERE HE PLANS TO STUDY EITHER CHEMICAL OR ELECTRICAL ENGINEERING.

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