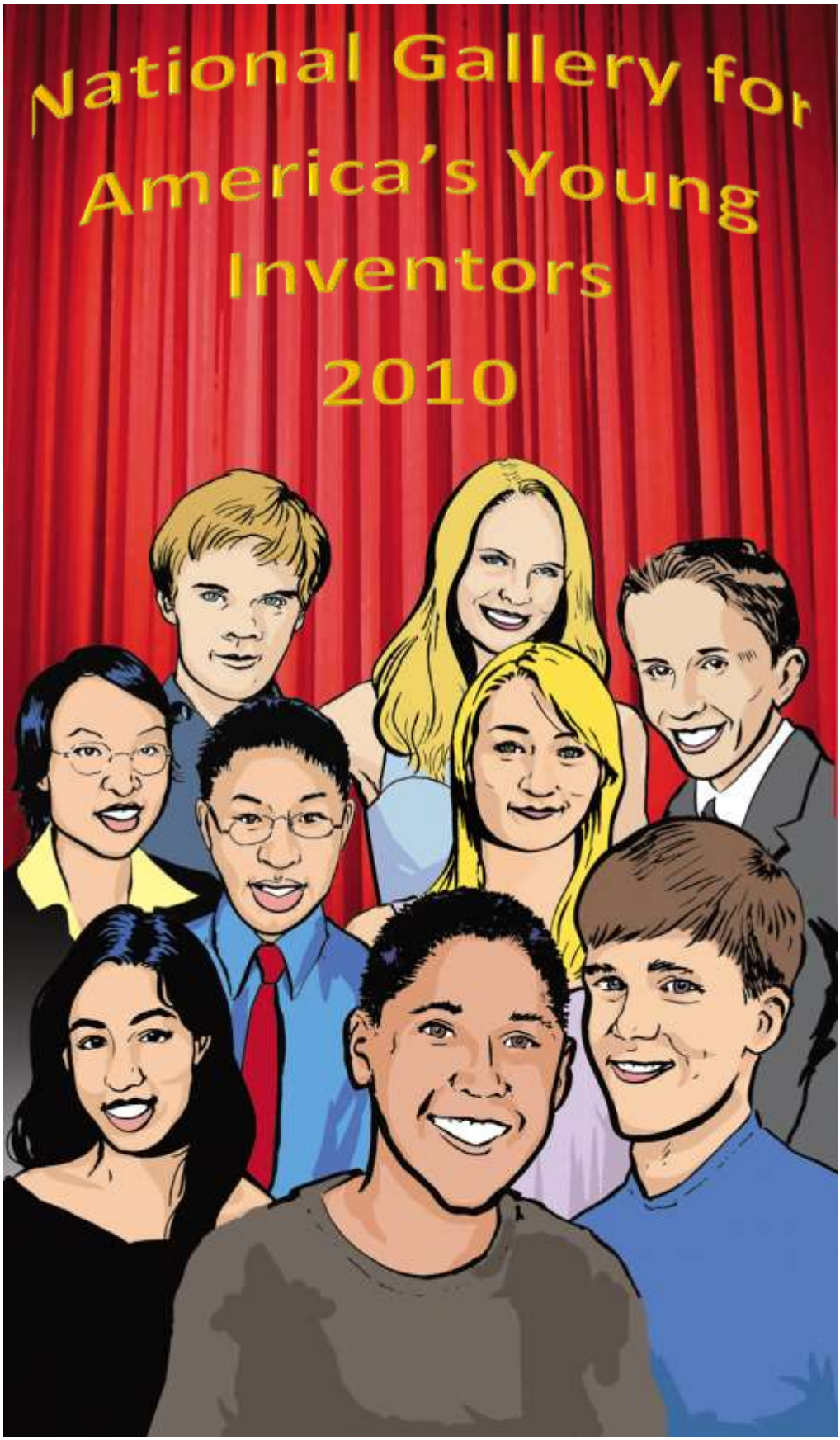


A 17 YEAR OLD GIRL FROM NORTH POINT HIGH SCHOOL IN WALDORF MARYLAND INVENTED:

The PAIN FREE SOCKET

INCORPORATING THERMAL BIOFEEDBACK INTO PROSTHETICS TO ELIMINATE PHANTOM PAIN IN AMPUTEES

THE STORY OF
KATHERINE BOMKAMP

KATHERINE BOMKAMP WAS BORN IN NEW YORK STATE TO A MILITARY FAMILY. WITH A FATHER IN THE US AIR FORCE, KATHERINE MOVED TO 7 STATES AND ATTENDED 10 SCHOOLS.

HER FAVORITE STATE WAS HAWAII WHERE SHE LEARNED TO HULA DANCE AND MAKE LEIS.

HER EXPERIENCE LIVING IN A MILITARY FAMILY ALLOWED HER TO SEE MANY SERVICEMEN AND WOMEN WHO RETURNED HOME AS AMPUTEES. KATHERINE LEARNED VERY EARLY THAT IT IS IMPORTANT TO TAKE CARE OF OTHERS. SHE RECOGNIZED THE PRECIOUSNESS OF LIFE AND THAT THERE IS A GREAT SENSE OF COMMUNITY.

WHEN HER JUNIOR CHEMISTRY TEACHER, ELLEN ESTEVEZ, CHALLENGED THE CLASS TO ENTER AN INVENTION IN ***ISEF*** (***INTERNATIONAL SCIENCE & ENGINEERING FAIR***), SHE REMEMBERED THE MANY AMPUTEES SHE HAD SEEN AT WALTER REED HOSPITAL IN WASHINGTON DC.

SHE BEGAN HER WORK ON THE ***PAIN FREE SOCKET***, WHICH INCORPORATES THERMAL BIOFEEDBACK THAT IS IMBEDDED IN PROSTHETICS TO REDIRECT THE SENSATION OF PHANTOM PAIN BY STIMULATING THE NERVE ENDINGS WITH HEAT.

KATHERINE IS THE ***WINNER OF THE INTEL INTERNATIONAL SCIENCE & ENGINEERING FAIR, 4TH PLACE GRAND AWARD IN BIOENGINEERING & MATERIALS*** (2009), AND THE ***INTEL SPECIAL AWARD FROM THE INTERNATIONAL COUNCIL ON SYSTEMS ENGINEERING*** (2009-2010).

SHE IS PRESENTLY A FRESHMAN AT WEST VIRGINIA UNIVERSITY WHERE SHE IS STUDYING POLITICAL SCIENCE WITH THE GOAL OF GOING TO LAW SCHOOL AT STANFORD, CA.

WRITER: GAY EVANS / ARTIST: WARREN BECKER

TWO 17 YEAR OLD GIRLS FROM LAKE HIGHLAND PREPARATORY SCHOOL IN WINDERMERE FL, INVENTED:

AN ELECTROLESS INTERMETALLIC COATING

TO REDUCE INFRARED EMISSIVITY AND TEMPERATURE OSCILLATION IN METAL ALLOY SAW BLADES

THE STORY OF

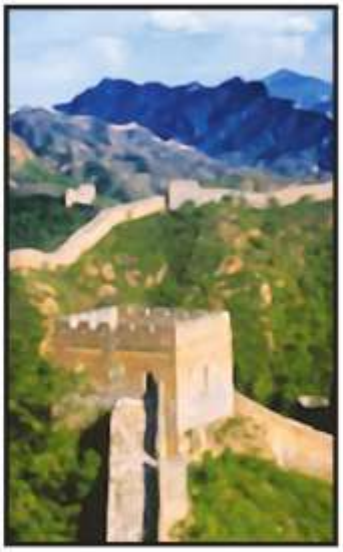
AUDREY LEASURE & GENNIFER RUBIN

AUDREY LEASURE GREW UP IN FLORIDA AND LEARNED TO SURF AT A YOUNG AGE. SHE DANCED BALLET FOR SEVEN YEARS AND WAS A CHEERLEADER FOR HER MIDDLE SCHOOL. AS A YOUNGSTER, GENNIFER RUBIN WAS A BIG FAN OF POKEMON, AND SHE WAS AN AVID READER. SHE HAS FOND MEMORIES OF TAGGING ALONG WITH HER OLDER BROTHER AND SISTER MOSTLY ON HER BIKE.

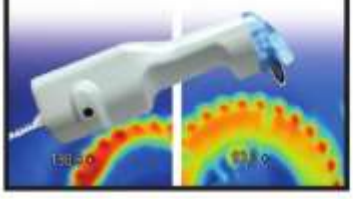
AUDREY HAS ENJOYED FOREIGN TRAVEL WITH HER SCHOOL AND ALSO WITH HER PARENTS. AT HER HIGH SCHOOL SHE IS ACTIVE ON THE DEBATE TEAM. IN THE SUMMER OF 2010, AUDREY SPENT 3 WEEKS IN ICELAND STUDYING THE POST VOLCANO ERUPTION WITH A NATIONAL GEOGRAPHIC PROGRAM.

DURING THE 2010 SUMMER, GENNIFER SPENT 2 MONTHS IN CHINA CONTINUING TO LEARN THE CHINESE LANGUAGE. HER FAVORITE SUBJECTS ARE CHINESE, PHYSICS AND SCIENCE.

FOR 6 YEARS AUDREY AND GENNIFER HAVE BEEN SCIENCE FAIR PARTNERS, AND BY 9TH GRADE THEY BEGAN RECEIVING RECOGNITION.



THEY ARE CURRENTLY PARTICIPATING IN A GRADUATE LEVEL RESEARCH CLASS THROUGH THEIR HIGH SCHOOL. AUDREY'S AND GENNIFER'S RESEARCH WAS DONE ON THE CAMPUS OF UNIVERSITY OF CENTRAL FLORIDA WHERE THEY BEGAN INVESTIGATING A WAY TO PREVENT SKIN BURNS CAUSED BY CAST REMOVAL SAW BLADES. THE GIRLS VISITED A COMPANY IN WEST PALM SPECIALIZING IN INTERMETALLIC COATING MATERIALS. THEIR RESEARCH WORK RESULTED IN THE DEVELOPMENT OF THEIR *"ELECTROLESS INTERMETALLIC COATING TO REDUCE THE EMISSIVITY AND TEMPERATURE OSCILLATION IN METAL ALLOY SAW BLADES".*



AUDREY AND GENNIFER WON *INTEL ISEF 1ST PLACE AND I SWEEEP (INTERNATIONAL SUSTAINABLE WORLD ENERGY, ENGINEERING & ENVIRONMENT PROJECT) 1ST PLACE & BEST IN FAIR 2010.*

AUDREY PLANS TO MAJOR IN NEURO-BIOLOGY AND PHILOSOPHY IN COLLEGE AND WANTS TO BECOME A NEUROLOGIST DOING CLINICAL RESEARCH. GENNIFER WANTS TO MAJOR IN PRE-MED, SPEND TIME IN THE PEACE CORPS, AND USE HER CHINESE LANGUAGE AS A DOCTOR.

A 16 YEAR OLD BOY FROM THOMAS JEFFERSON HIGH SCHOOL IN ALEXANDRIA, VIRGINIA, INVENTED:

A NOVEL NANOPARTICLE DEVICE

SYNTHESIS AND CHARACTERIZATION OF BIOMARKER-HARVESTING HYDROGEL NANOPARTICLES

THE STORY OF

ANIRUDH MOHAN

ANIRUDH MOHAN'S FAMILY ORIGINATES FROM SOUTHERN INDIA, WHICH HE HAS BEEN FORTUNATE ENOUGH TO VISIT EVERY 2 TO 3 YEARS.

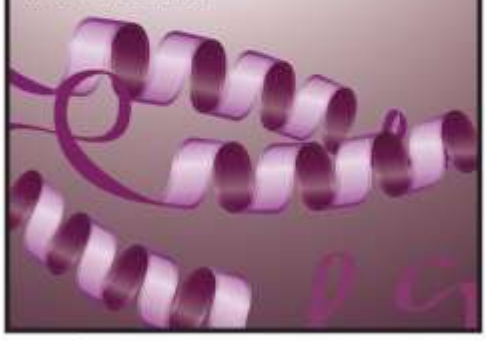
ANIRUDH GREW UP IN CLIFTON, VA, NEAR WASHINGTON, DC. ALTHOUGH HE ALWAYS HAD AN INTEREST IN SCIENCE, IT WAS AT THOMAS JEFFERSON HS. FOR SCIENCE & TECHNOLOGY WHERE HE WAS INSPIRED BY BOTH HIS PEERS AND HIS SOPHOMORE A.P. CHEMISTRY TEACHER TO PURSUE RESEARCH IN SCIENCE.

WHILE IN HIGH SCHOOL HE RAN TRACK AND PLAYED BASKETBALL IN THE SMALL AMOUNT OF FREE TIME WHICH HE HAD. HE ALSO PLAYS THE GUITAR WHERE HE PREFERS CLASSIC ROCK AND INDIAN SONGS.

ANI HAS DONE A GREAT DEAL OF FREE-LANCE COMPUTER WORK AND PROGRAMMING ON THE SIDE. LAST YEAR HE WAS ASKED TO CREATE THE CAMPAIGN FOR THEIR STATE SENATOR.

THIS PAST SUMMER HE INTERNED AT AN INTELLECTUAL PROPERTY FIRM IN NORTHERN VIRGINIA AND HAD THE OPPORTUNITY TO SEE ANOTHER OF HIS AREAS OF INTEREST.

HE IS NOW A FRESHMAN AT DUKE UNIVERSITY WHERE HE IS CONTINUING HIS SCIENCE STUDIES IN BIOMEDICAL ENGINEERING. HIS INVENTION IS A ***NOVEL NANOPARTICLE DEVICE CAPABLE OF HARVESTING SMALL PROTEINS, KNOWN AS BIOMARKERS FROM BODILY FLUIDS.*** THESE BIOMARKERS WILL PROVIDE VALUABLE DIAGNOSTIC INFORMATION FOR A VARIETY OF DISEASES.



ANIRUDH WON THE PRESTIGIOUS ***CHRISTOPHER COLUMBUS FOUNDATION LIFE SCIENCES AWARD*** (2010), AND WAS A ***SIEMENS COMPETITION SEMIFINALIST*** (2009). HE PLANS TO CONTINUE HIS STUDIES IN SCIENCE, BUT HAS NOT YET DECIDED ON A CAREER IN RESEARCH.

WRITER: SUE LYONS / ARTIST: WARREN BECKER

A 16 YEAR OLD BOY FROM EDEN PRAIRIE HIGH SCHOOL IN EDEN PRAIRIE, MINNESOTA INVENTED:

The CHAD

CIRCUIT HEAD ACCESSIBILITY DEVICE

THE STORY OF **GAVIN G. OVSAK**

AS A TODDLER, GAVIN LOVED DOING 200 TO 300 PIECE PUZZLES. BORED WITH THESE, HE TURNED THE PIECES OVER AND PUT THEM TOGETHER USING THE "GRAY" SIDE. HE EARNED THE NICKNAME, ***PUZZLE BOY***.

IN ELEMENTARY SCHOOL GAVIN COMPETED IN THE F.I.R.S.T. LEGO™ LEAGUE ROBOTIC COMPETITIONS. IN NINTH GRADE HE CO-FOUNDED ***THE EPHS ROBOTICS CLUB***, AND HIS TEAM WON 1ST PLACE TWICE IN THE STATE'S F.I.R.S.T.™ ROBOTICS COMPETITION ADVANCING TO THE INTERNATIONAL COMPETITION.

GAVIN HAS DESIGNED COMPUTER PROGRAMS INCLUDING ***ROOMGUIDE***, A KIOSK/DESKTOP PROGRAM TO NAVIGATE HIS 3-STORY HIGH SCHOOL. HE IS WORKING TO MARKET ***ROOMGUIDE*** TO HOSPITALS AND COLLEGE CAMPUSES.

GAVIN ALSO DESIGNED ***MATHDROID FOR KIDS***, A FUN WAY TO TEACH BASIC MATH.

INSPIRED BY HIS VOLUNTEER WORK AT THE COURAGE CENTER, A NONPROFIT ORGANIZATION IMPROVING THE LIVES OF PEOPLE WITH DISABILITIES, GAVIN DEVELOPED ***THE CHAD (CIRCUIT HEAD ACCESSIBILITY DEVICE)***. DISABLED PEOPLE OFTEN HAVE TROUBLE USING A COMPUTER MOUSE, AND THIS DEVICE ALLOWS A PERSON WITH LIMITED ARM MOVEMENT TO MORE EASILY USE A COMPUTER. A MICROCHIP IS ATTACHED TO A BASEBALL CAP AND CONNECTED TO A STANDARD USB PORT ON A COMPUTER. HIS MICROCHIP IS PROGRAMMED TO READ HEAD TILTS TO MOVE THE CURSOR, AND THE CLICKING IS CONTROLLED BY A "BITE SWITCH".

GAVIN IS A 2010 ***DAVIDSON FELLOW***, AND WON THE FOLLOWING AWARDS IN 2010: ***INTEL ISEF 4TH PLACE GRAND AWARD, NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS INNOVATIVE ENGINEERING AWARD, THE US AIR FORCE OUTSTANDING PROJECT AWARD, THE US ARMY AWARD FOR EXEMPLARY RESEARCH***, AND THE ***US NAVY NAVAL SCIENCE AWARD***.

GAVIN PLANS TO MAJOR IN BIOMEDICAL ENGINEERING IN COLLEGE. HIS HERO IS ***'IRON MAN'*** WHO USES TECHNOLOGY TO HELP PEOPLE. GAVIN'S GOAL IN LIFE, LIKE IRON MAN'S, IS TO IMPROVE LIVES BY DEVELOPING "BIOMEDICAL DEVICES".

WRITER: SUE LYONS / ARTIST: WARREN BECKER