EWH CHAPTER OF THE YEAR COMPETITION REPORT

Chapter/University Name: **University of California, San Diego**
Date: **April 5th 2015**

PROGRAMS/PROJECTS DESCRIPTION

HealthHacks Hackathon:

On February 28th, 2015, Engineering World Health at UCSD organized and hosted a first of its kind engineering hackathon in partnership with local companies, restaurants, professors, alumni, engineering departments, health institutes, and student organizations. Students were presented with a real global health issue and had an entire day to work with a team to come up with an innovative and exciting solution. A total of 110 students participated and got the opportunity to work with tools such as biosensors, 3D printers, design software, and more to bring their ideas to life. (Figures A and B)

Design projects:

Our chapter has been designing and developing a set of medical devices to detect HIV drug treatment failure in patients visiting physicians in rural hospitals. Our devices require incredible engineering to bring the cost to manufacture to below 1/40th the cost of a comparable device on the market, while still maintaining similar accuracy. The devices are currently being prototyped and manufactured by 31 undergraduate engineering students. (Figure C)

Workshops:

Since October of 2014, the UC San Diego chapter of engineering world health has been hosting monthly workshops in order to encourage engineering undergraduate students to develop necessary engineering skills. To date, we have held four workshops on Computer Aided Design, Microcontroller Programming, and Circuit Design and Building Tools. Each individual event attracted between 20-50 students each. (Figures D and E)

STEM activities:

UCSD Engineering World Health's Outreach program was developed through a partnership with Casa Familiar. The program's goal is to offer students the opportunity to engage in projects that develop skills in engineering design, science, math, technical engineering, and critical thinking. In addition, the program hopes that students will be contributing to vital international issues by learning ways to create low cost devices for those in need. This project has connected 150 low-income San Ysidro students with passionate UCSD volunteer engineering students. (Figure F)

ORGANIZATIONAL ACTIVITIES

Chapter Structure and Statistics
Our chapter is organized into two main divisions that interact with each other weekly: Project Teams and Organizational. Quarterly general body meetings attract between 40 and 50 students. Twice a week project team meetings require attendance of all 30 project team members. The organizational side consists of 10 officers that meet weekly to organize all non-project team events.

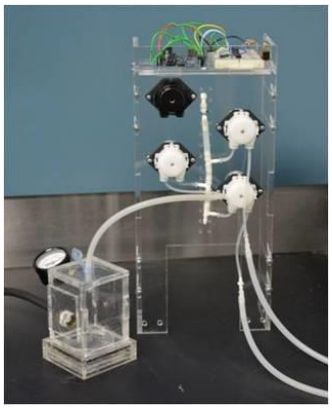
Fundraising approaches
All funding is provided through grant applications (totaling approximately $5000 in 2014) and UCSD (approximately $3000 in 2014).

Other chapter activities:
UCSD EWH arranges a weekly lecture series on HIV and its treatment taught by students to other students. This series often features guest speakers from the renowned infectious diseases and bioengineering departments at UCSD.
Tours of local clinics and institutes are often organized to give interested students the chance to learn the bioengineering perspective as it pertains to the clinical setting.
We also hold monthly social events for all members (ranging from hikes taking advantage of the local scenery to exploring restaurants to rock climbing). (Figure G)

APPENDIX - PHOTOS, TABLES, SCHEMATICS AND ADDITIONAL MATER

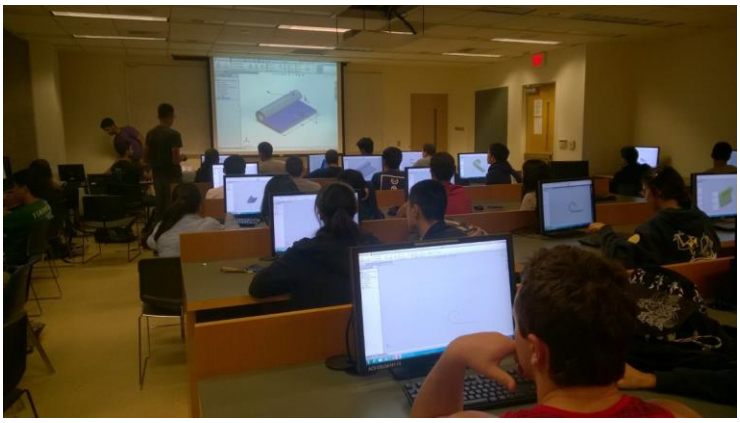
Figure A: UCSD EWH HealthHacks Hackathon. Over 100 students, faculty, and industry came together to solve global health engineering problems.

Figure B: One of the many innovative solutions at UCSD EWH HealthHacks Hackathon. Students were provided with resources and mentorship to CAD and prototype their designs.



<---- Figure C: A prototype of the RNA extraction device -- one of four devices used to help diagnose HIV treatment failure.

-----> Figure D: Microcontroller Programming Workshop



<----- Figure E: SolidWorks Workshop

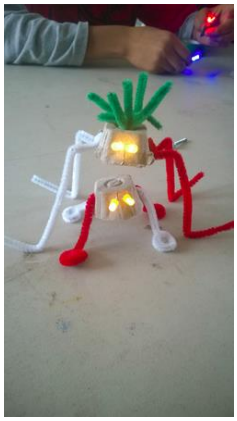


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Figure G: A Hike at Torrey Pines