General Business

1st Place: KidVentions

Kidventions is a toy company which leverages three-dimensional (3D) printing to empower our customers, kidventors, to create truly customized toys. Using intuitive computer aided design software, 123D Creature, kidventors can easily design virtually any figure or accessory in less than 15 minutes. After designing the toy in 123D Creature, kidventors will watch as their toy materializes in our 3D printers right in our store. By featuring 3D printers in our stores, Kidventions will build this cutting-edge technology into an experience. In addition to providing an excellent point of differentiation, 3D printing provides Kidventions with several sustainable competitive advantages over competing toy stores, including greater employee buy-in and less capital tied-up in inventory. By leveraging rapid, 3D printers and intuitive, CAD software, Kidventions both creates greater value for our customers and higher returns for our investors.

Neil O'Donnell, Whiting School of Engineering, Graduate
Noah Greenbaum, Whiting School of Engineering, Undergraduate
Erik von Heijne, Whiting School of Engineering, Graduate
Merrie Zhang, Whiting School of Engineering, Undergraduate

2nd Place: Research Calendar, LLC

Each year, $500M is spent on clinical recruitment alone, yet 80% of clinical trials are delayed due to lack of enrollment. This inability to recruit participants can cost pharmaceutical companies up to $3M per day and costs the industry billions of dollars each year.

Research Calendar, LLC is a technology company providing participant recruitment and market research services to corporations, hospitals, and universities. Research Calendar's unique, simple, and real-time online marketplace bridges the omnipresent gap between the conductors and participants of studies to streamline the research process, improve demographic targeting, and decrease costs. Businesses use Research Calendar to find relevant demographics interested in participating in paid studies, receive feedback on products or services, and develop relationships with potential customers. Researchers post their studies online through Research Calendar in order to avoid the hassle of traditional participant recruitment, manage their studies, and quickly obtain data.

Research Calendar is led by Kunal Parikh (serial entrepreneur and published researcher with industry experience), Sagar Chopda (programmer and web developer with start-up experience) and Edward Dcruz (marketer with corporate recruitment experience). Together, they are dedicated to empowering researchers and enabling participants in order to improve the research process.

Kunal Parikh, School of Medicine, Graduate
Sagar Chopda
Edward Dcruz

3rd Place: Rhizoid Technologies

Rhizoid Technologies is developing a suite of process technologies to improve crop yields. Our technologies will transform marginal and/or nonproductive spaces into highly productive croplands while simultaneously diminishing energy, labor, pesticide, and water inputs. In addition, we will reduce nitrogen and phosphorus runoff pollution by one to two orders of magnitude per ton of food harvested. Our initial market entry strategy is geared toward the production of specialty crops for niche markets, but our long-term vision is to apply our technology to healthy energy- and protein-dense staple foods. By emphasizing efficiency, environmental impact, mechanical simplicity, and ease of automation, we are creating technologies that will be suitable for implementation in the developing world as well as advanced economies. We hope to play a major role in ensuring global food security as populations expand in the coming millennium.

Michael Sacerdote, School of Medicine, Postdoc

Medical Technologies

1st Place: PathoS ClearView

PathoS (Pathology Solutions) delivers low-cost solutions that streamline the processes used in diagnostic pathology. Our first device, ClearView that enables pathologists to quickly prepare microscopy slides to help prevent 66,000 unnecessary reoperations each year.

Patients undergoing BCS have a one in five chance of requiring a reoperation because surgeons cannot determine if the entire tumor has been removed before the surgery ends. During the course of other cancer surgeries, a surgeon sends the excised tumor to the pathologist, who prepares microscopy slides to assess tumor margins before the surgery ends. Unfortunately, the inherent mechanical properties of breast tissue make slide preparation for this assessment nearly impossible within an acceptable time frame. Therefore, intra-operative assessment of tumor margins by a pathologist is rarely offered to BCS patients. Enabling this process to occur within the accepted 20-minute window can help prevent up to 500,000 BCS procedures in the US, and save the healthcare system at least $500M in the next 10 years.

ClearView is a mechanical stabilization system comprising a reusable applicator and a disposable component that enables pathologists to quickly prepare microscopy slides of mechanically-weak tissues.

The majority of groups currently working on intra-operative margin assessment are creating devices that ask the surgeon to perform the role of a pathologist greatly disrupting the operating room workflow. Moreover, these solutions are largely inadequate because they cannot provide the range of information currently used by pathologists to determine if cancer cells are present at the edge of the specimen. ClearView leverages the existing infrastructure and the expertise of pathologists to provide BCS patients with the gold standard of care: histological assessment of tumor margins.

Qing Xiang Yee, Whiting School of Engineering, Graduate
Vaishakhi Mayya, Whiting School of Engineering, Graduate
Hector D. Neira, Whiting School of Engineering, Graduate
Anjana Sinha, Whiting School of Engineering, Graduate

2nd Place: EchoSure

Each year, thousands of patients will undergo reconstructive surgery after cancer and trauma. These surgeries can restore patients' lives, yet too often they result in failure due to vascular complications. If signs of a problem are detected early enough, surgeons have the ability to repair the complication before it is too late. However, *half* of the patients who present with this common problem suffer from costly and morbid surgical failure due to weaknesses in current monitoring solutions.

EchoSure has developed a novel technology with the power to prevent thousands of surgical failures *and* avoid unnecessary reoperations while saving hospitals over $100M per year. Current alternatives have high false positive rates and significant time delays to identify a problem. Our noninvasive solution is the first device to give doctors the tools needed to detect problems while
they can still be fixed.

EchoSure utilizes a dual component system. The first component, EchoMark, is an implantable, bio-absorbable marker placed at the surgical site. EchoMark acts as a homing beacon under ultrasound imaging, making the areas of interest easy to find. The EchoFind software then analyzes the vessels in these areas to determine if the patient's recovery is proceeding well. EchoSure gives clinicians the ability to look inside the blood vessel non-invasively, enabling surgeons to detect and fix problems immediately.

Our technology has been successfully tested in a large animal model and IP protection of our patent pending innovation offers an opportunity to secure market leadership. We expect to hit the market within 3 years and our device can also be used to improve outcomes in vascular and transplant surgery, presenting tremendous opportunity for future expansion. With your support, EchoSure will come to market and change lives while offering a market opportunity of over $300 million dollars a year.

Devin O'Brien-Coon, Whiting School of Engineering, Graduate
Kaitlyn Harfmann, Whiting School of Engineering, Graduate
Adam Lightman, Whiting School of Engineering, Graduate
David Narrow, Whiting School of Engineering, Graduate
Ting Yu Lai, Whiting School of Engineering, Graduate
Alex Harding

3rd Place: Sympsolutions Presents ACCURIGHT

Hypertension, or high blood pressure, affects one-third of all Americans, increases the risk for heart disease, stroke and renal disease, and is directly associated with 350,000 deaths annually. In the US, the annual cost attributable to hypertension is $250 billion in medical expenses. Currently, antihypertensive drugs are the only treatment. However, these therapies fail for the 14 million Americans that cannot control their blood pressure even when using multiple antihypertensive medications; this condition is known as resistant hypertension. Two experimental device-based treatments have shown promise, but are currently in clinical trials: renal denervation (RDN) and carotid baroreceptor stimulation (CBS). However, RDN excludes one third of patients and may damage the renal artery. Meanwhile, CBS requires the invasive implantation of a device and has failed safety endpoints due to severe procedural complications. Therefore, there is a need for a novel device-based treatment to help the millions with resistant hypertension.

SympSolutions has developed AccuRIGHT, a novel device to treat resistant hypertension within a clinician's office. AccuRIGHT noninvasively eliminates the carotid body, a central contributor to hypertension, without an operating room, thereby expanding the eligible patient population and facilitating adoption. As this novel device avoids the shortcomings of other device-based treatments, patients will see improved health outcomes, health care providers will gain a new source of revenue, and the cost burden to the healthcare system will be reduced.

The proportion of hypertensive Americans continues to grow and the market for device-based therapies for hypertension continues to expand. Therefore, AccuRIGHT will first target the most severe patients within resistant hypertension before expanding to all hypertensive patients within the US and worldwide.

SympSolutions has begun initial feasibility animal trials and seeks investment to continue system development and

initiate further animal trials for safety and efficacy.

Hiren Mistry, Whiting School of Engineering, Graduate
Michael Batista, School of Medicine, Graduate
Anmol Chopra, Whiting School of Engineering, Graduate
Stephen Dria, Whiting School of Engineering, Graduate
Hina Shah, Whiting School of Engineering, Graduate
James Su, Whiting School of Engineering, Graduate

Social Enterprises

1st Place: Healthify

Healthify is a Baltimore, MD based startup building a modular eHealth platform to help care teams address varied patient psychosocial risks and conduct smarter patient outreach. Our software improves health outcomes in primarily low-income populations by empowering patients with information on the basic resources needed to be healthy, contextualizing a patient's environment for a healthcare provider, and leveraging mHealth tools to coordinate care and engage patients outside the clinical setting. We hope to effectively bring a patient's social environment into the healthcare equation.

James Corines, Krieger School of Arts and Sciences, Graduate
Praneeth Sadda, Whiting School of Engineering, Undergraduate
Manik Bhat
Eric Connor

2nd Place: Rapid Malnutrition Assessment Tool

Malnutrition is the leading cause of morbidity and mortality of children in developing countries; WHO deems it the single greatest threat to global public health. Malnutrition in young children causes stunted growth and cognitive development that does not reliably reverse even with intervention. Thus, rapid diagnosis of childhood malnutrition is crucial. This is a major concern for relief organizations such as Doctors Without Borders (Médecins Sans Frontières).

Currently, the accepted metric used to assess malnutrition in children is mid-upper arm circumference (MUAC). Existing literature and past studies have deemed MUAC measurements as a reliable means to assess childhood malnutrition. The current procedure involves a community health worker using a simple band to measure the circumference of children's mid-upper arm. However, Doctors Without Borders has identified a host of problems with this process that compromise efficient allocation of food resources. These problems include inaccurate measurements resulting from: excessive tension, digit bias, and incorrect arm midpoint location. Our newly developed device curtails these errors in measuring arm circumference in order to ensure the quick and accurate assessment of childhood malnutrition in the developing world.

Moreover, the current process requires the health worker to record all measurements by hand in the field, and consequently spending several hours to reenter in the data into a computer at the end of the day. Our solution streamlines this process by leveraging low cost mobile phones as a method for data entry. Cell phones are becoming increasingly ubiquitous in the developing world, and our Java-based phone application will revolutionize the way international relief organizations collect data. This novel product and procedure will provide much needed help to relief organizations around the world trying to accomplish this important task of early malnutrition detection.

James Lin, Whiting School of Engineering, Undergraduate
Craig Bohrson, Whiting School of Engineering, Undergraduate
Aaron Chang, Whiting School of Engineering, Undergraduate
Steven Dalvin, Whiting School of Engineering, Undergraduate

3rd Place: PQ Inc.

PQ stands for “pink quotient” –kind of like an emotional quotient, but for gender sensitivity! Essentially, PQ is a gender sensitivity certification that will be made available to matrimonial web sites across India; PQ Inc. is a website that will house gender sensitization information, as well as a Q&A forum to help young people better navigate the terrain of gender relations as they begin their romantic/life partner relationships. For a small fee, potential brides and grooms can see if their future partner has a baseline level of gender sensitivity and also have access to information on ways to become more gender sensitive, while encouraging the same in their relationships. The general impact of the idea comes in the ability to change the social construct of what society values as important in partner selection, but also in it's ability to distribute information to the masses. Over time, the service can expand to incorporate workplace sensitizations and gender audits, along with a merchandising line promoting the idea.

Anita Thurakal, Bloomberg School of Public Health, Graduate