The Center for Medical Innovation at the University of Utah presents

B2B COMPETITION REPORT: 2019
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The Bench to Bedside program makes it possible for our students to be part of a distinctly collaborative ecosystem where they are accomplishing things that really can’t be done anywhere else. By investing in the brightest minds and entrepreneurs of tomorrow, we are ensuring a roadmap to Utah’s future success while also having national and global impact. We can’t wait to see what they will come up with next.

MICHAEL GOOD, MD
Senior Vice President for Health Sciences
CEO, University of Utah Health
Dean, School of Medicine

B2B teaches the impact and power diversity of thought can bring to the innovation process. We have engaged 1,062 students on 238 interdisciplinary teams, and 67 of these teams have gone on to commercialize their creations. With expert mentorship and philanthropic support, our students continue developing technologies that address some of health care’s most vexing problems.

JOHN LANGELL, MD, PHD, MPH
Executive Director, Center for Medical Innovation
The 2018-2019 season marks the ninth consecutive year of the Bench to Bedside (B2B) Medical Innovation Competition. With only six months and $500, students from multi-disciplinary backgrounds collaborate to develop technology solutions for a broad spectrum of health care challenges. This year, new innovations were presented in primary care, pediatrics, anesthesiology, women’s health, surgical aids, periodontology, and a number of other medical specialties.

A total of 41 teams and nearly 150 students competed this year. More than $120,000 in prize money was awarded to winning teams. The competition accepted entries from students attending academic institutions across Utah, including Brigham Young University, Utah State University, Utah Valley University, Weber State University, and West High School.

From its inception, B2B has been a student-run program. The student leadership is responsible for administering workshops for competitors, facilitating access to university and industry resources and mentors, and organizing the final competition night. As Student President, I extend a special thank you to this year’s dedicated student leadership team:

Vice President of Outreach: Ali Eisenbeiss
Vice President of Engagement: Brody King
Vice President of Engineering: Jesse Nelson
Vice President of Medicine: Bianca Rich

"These students exemplify the power of cross-collaboration to transform science and medicine, providing a great reflection of the innovation ecosystem found in the state of Utah."

We also express our sincere gratitude for the tremendous mentorship and support received from the academic, clinical, educational, and industry communities, as well as the generous sponsors who make this competition possible year after year.

In this publication, you’ll read about this year’s innovative solutions to some of health care’s biggest problems. These students exemplify the power of cross-collaboration to transform science and medicine, providing a great reflection of the innovation ecosystem found in the state of Utah.

JASON MILLER
President of Bench to Bedside
Since 2010, Bench to Bedside has mentored 1,062 participants on 238 teams that have invented 242 medical devices, filed 155 patents, and launched 67 companies.

**DISCIPLINES REPRESENTED IN 2019**

| 1. Accounting                     | 16. Entertainment Arts & Engineering |
| 2. Biochemistry                   | 17. Entrepreneurship                |
| 3. Bioengineering                 | 18. Finance                         |
| 5. Biomedical Engineering         | 20. Genomics & Biotechnology        |
| 8. Chemistry                      | 23. Marketing                       |
| 12. Dentistry                     | 27. Pharmacy                        |
| 15. Electrical Engineering        | 30. Pre-Medicine                    |
|                                  | 31. Psychology                      |

**2018–2019 TEAM STATS**

- Participants: **144**
- Teams: **28**
- Devices: **28**
This year’s competition included teams from other Utah universities, including Utah State University, Weber State University, Utah Valley University, and Brigham Young University.

1. Control: Discrete Urinary Device
2. Cool Kid Car Seat
3. Echo.DX
4. EndoWic
5. EnTT
6. Flourix
7. Gomu-mask
8. HealthLink Cooperative
9. Insufflex, LLC
10. Kidney Tracker
11. L&D Technologies
12. LaparoAssist
13. Lappy Appy
14. Mapping Otoscope by Heimdall Health
15. Myoplexer
16. NTT
17. NüSilo
18. Smartbeat
19. smart-Plate
20. SonoMaven
21. Surgery Checklist
22. TidyCup
23. Totally Tubular
24. TRAC Navigation
25. TRxopicals
26. Valvublator
27. Vitapul

HIGH SCHOOL TEAMS
28. Med UP!

LEGACY TEAMS
29. Advanced Video Laryngoscope
30. Beacon Sleep Solutions
31. Deco-UV
32. DripSense
33. KneeHarmony
34. NipaYe
35. PreOv
36. SIT UP
37. SureStop
38. The UP Sheet
39. Versisnare
40. Vita Sensors
41. XLynk Surgical

(Note: Team summaries were written and submitted by members of each B2B team. The teams themselves are responsible for the material claims therein. They have been edited for readability.)
**CONTROL: DISCRETE URINARY DEVICE**

**Problem:** Many prostate cancer patients experience urinary incontinence or obstruction, leaking, or frequent urination following treatment. They may have to use catheters or pads, which disrupt day-to-day life.

**Solution:** We have developed a catheter-like urinary control device that is completely contained within the bladder and the urethra. A one-hand-operated valve gives the user control to urinate normally at their convenience.

**Team Members:**
- Zachary Barber
- Jessica Reimer
- Paisley Tarboton

**COOL KID CAR SEAT**

**Problem:** It can take up to 20 minutes for a child in a car seat to become thermoregulated in standard car seats due to poor airflow and insulating materials in their designs. In extreme cases, children may experience heat exhaustion or hyperthermia, possibly resulting in more severe complications including death.

**Solution:** Cool Kid Car Seat has its own airflow system that employs a spacer mesh allowing abundant heat transfer to and from its occupant. Using Bluetooth technology, the seat will use the car’s existing AC/heating system to both provide and pump the warm/cold air throughout the seat’s surfaces. Parents can monitor and regulate the seat’s temperature on a smartphone or tablet.

**Team Members:**
- Trevor Teerlink
**ECHO.DX**

**Problem:** Research shows that physicians spend more than half of their time in data entry, creating a significant need for products that can streamline note-taking. Currently, there is no product on the market to facilitate intraoperative dictation.

**Solution:** Echo. DX utilizes a voice-activated, wireless, hands-free dictation capture microphone designed for intraoperative use. Echo.DX wirelessly uploads audio files to existing transcription software databases to streamline the dictation process.

**Team Members:**
Ramesh Grandhi
Brody King
Robert Walker
Sarah Wasden

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**ENDOWIC**

**Problem:** EndoWic – Periodontal apical abscesses affect millions of people worldwide. Untreated infections can lead to severe bone and tooth loss and cause life-threatening systemic infections. Current treatment options are invasive, expensive, and can lead to complications. A quicker, less invasive, more affordable procedure is needed.

**Solution:** EndoWic uses a 2mm incision to access the site and apply cavitation to remove the infection with no further tissue damage or excess bone removal. EndoWic reduces cost and time, shortens recovery, and decreases complications and recurrence.

**Team Members:**
Emery Boudreau
Pace Carnney
Sarah Eckstein
Problem: Ten percent of neonates worldwide need critical care. In developed countries, access to this care is easily obtained. But patients in developing nations are challenged by the thermal decomposition that occurs when traveling long distances to reach providers.

Solution: EnTT seeks to reduce infant mortality rates in developing countries by offering an inexpensive, portable, thermally-insulated bed. Its folding design allows it to be carried in helicopters, ambulances, or other vehicles.

Team Members:
Danielle Bonser
Celia Dunn
Brian Phillip
Coulson Rich
Luke Son

FLOURIX

Problem: Cervical dilation is necessary to access the uterus for a variety of medical procedures, including hysteroscopies, polypectomies, endometrial biopsies, and dilation and curettage. However, current dilation methods are painful and limited in the diameter of dilation obtained and, in some cases, necessitate surgery under anesthesia.

Solution: Flourix is a cervical dilator that slowly and gently dilates the cervix to decrease pain and trauma during procedures. The device incorporates a spring expanding system with a hollow expanding lumen that is capable of dilating the cervix to 9mm. The device stays in place during the entire procedure to ensure proper access is maintained. Flourix decreases operating room procedures and painful tearing of the cervix while increasing ease and efficiency of procedures.

Team Members:
Matt Didericksen
Lauren Donovan
Ali Eisenbeiss
Jesse Nelson

$10,000 – RUNNER-UP
GOMU-MASK

Problem: Facial masks may be available in a variety of sizes, but they have very little versatility. Sizing masks to patients can also create enormous waste while not fitting patients with a great seal.

Solution: Gomu-mask provides the flexibility to adapt for any face size and shape. It can be used in an emergency to resuscitate a patient due to its versatile shaping ability.

Team Members:
Bennett Graff
Jason Huang
Sandra Lee
Farshad Mogharrabi
Jake Wahlen

HEALTHLINK COOPERATIVE

Problem: Individuals living in "end of the road" communities around the world have poor access to quality health care.

Solution: The goal of HealthLink Cooperative is to use technology to bridge gaps and improve access to quality health care. We have developed an integrative health platform that connects clinicians in a health care center to both patients and community health workers in the field.

Team Members:
Jasmine Banner
Justin Bowman
Brandon Cook
Forrest Hamrick
J. Andrus Skelton
Sunny Yang

$5,000 – Best in Health Care IT Award
INSUFFLEX, LLC

**Problem:** Timely surgical care is a global health crisis that can be alleviated through access to minimally invasive surgery techniques. Body cavity insufflation by CO2 gas is a key component of modern surgical care. However, insufflators on today’s market are not designed to function outside of major U.S. and European hospitals.

**Solution:** InsuffleX offers a portable, minimally invasive insufflator that uses filtered air. Because it can be used anywhere in the world—from a combat hospital to a rural health clinic—InsuffleX is capable of saving the lives and improving surgical outcomes for millions of people.

**Team Members:**
- Penny L. Cannon
- Brian J. Farnsworth
- Adam Kessel
- Andrew Nelson
- Joshua Webb

KIDNEY TRACKER

**Problem:** Dialysis patients are commonly disengaged from their hemodialysis treatments, but patient engagement is essential to achieve optimal fluid balance and avoid excessive fluid intake. Smartphone apps used for clinical communication, remote patient monitoring, and self-management are still limited. Specifically, there is a lack of readily available and validated mobile apps for the hemodialysis (HD) population.

**Solution:** Kidney Tracker is a smartphone app for dialysis patient engagement. It tracks dialysis treatments, monitors fluid intake and patient activity, incentivizes patients to stay engaged, and connects patients to their care providers.

**Team Members:**
- Pamela Giahi
- Sherry Liao
- Yuanrui Sang

$5,000 – John Noorda
Consumer’s Choice Award
**Problem:** Labor induction during the 39th week of pregnancy reduces the number of cesarean deliveries, the risk of pregnancy-related blood pressure disorders, and the need for infant breathing assistance. As the number of inductions increases, a more efficient method for mechanical induction is needed.

**Solution:** L&D Technologies proposes a more efficient method for mechanical labor induction in clinical settings. The device facilitates gradual, mechanical cervix dilation while allowing delivery of medically indicated fluids to the cervix, increasing the effectiveness of labor induction.

**Team Members:**
- Yennhi Nguyen
- Jonathan Poulson
- Clark Ragsdale
- Mia Wipfel

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**LAPAROASSIST**

**Problem:** Laparoscopic surgeries often entail multiple incisions and instruments to perform abdominal surgery, requiring multiple surgeons and health care workers to assist with holding and controlling the instruments. This results in longer surgery, higher costs, and many abdominal scars.

**Solution:** The LaparoAssist is a trochar, or introducing device, that can enter through one incision and then expand to become (or contain) multiple laparoscopic tools. In one example, our current device could house a light, camera, and an existing laparoscopic tool to enter the surgical space, all entering through a single incision.

**Team Members (Brigham Young University):**
- Scott Cunnington
- Lance Hyatt
- Brandon Sargent
- Kenny Seymour
- Jacob Sheffield
**LAPPY APPY**

**Problem:** Current devices used in laparoscopic appendectomies are expensive and time consuming. A device that cuts costs and procedure time while maintaining safety and efficacy benefits both hospitals and patients.

**Solution:** Lappy Appy quickly deploys stable silk sutures at the base of the appendix and at the appendicular artery. This eliminates the cost of staples and reduces operation time and effort.

Team Members:
Danielle Bonser
James Ellis
Trent Parry
Naveen Rathi

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**MAPPING OTOSCOPE**

**Problem:** Pediatricians and primary care physicians do not have a quantifiable and repeatable way of identifying the fluid behind the tympanic membrane. This leads to misdiagnosis and unnecessary medical procedures.

**Solution:** The Mapping Otoscope by Heimdall Health offers an electronic device with a touchscreen user interface. The device is capable of measuring and displaying how its pre-described pressure stimulus deflects the tympanic membrane in 3D.

Team Members:
Allie Kachel
Tarek Marrouche
Suzette Mastrangelo
Nicholas Witham

$25,000 – GRAND PRIZE
MYOPLEXER

Problem: Adults with below–elbow amputations need the ability to consistently use their existing anatomy to restore hand dexterity.

Solution: Myoplexer helps by measuring the muscle geometry of each motor unit in the forearm to determine the intended hand gesture of the user.

Team Members: Devan Anderson, Jason Huang, Tanner LeSueur, Farshad Mogharrabi, Rami Shorti, Nicholas Witham

NÜSILO

Problem: Current surgical silo bags for ventral wall defects rely on widely shared and homogenous architectural features, making utilization cumbersome and time consuming both in training and use.

Solution: By creating a simple remediation of the opening of the bag, NüSilo retains the functionality while allowing for faster device employment, reduced training time, and less inventory space.

Team Members: Raquel Reisinger, Kristen Saad, Luke Son, Nicole Winter, Trey Winter

$5,000 – Best in Medicine Award
PD CATHETERS

**Problem:** Peritoneal Dialysis (PD) is a better alternative to standard hemodialysis, which requires patients to make multiple trips to a dialysis center every week and be hooked up to a machine for lengthy transfusions. However, PD has higher infection rates, difficult placement, and common migration that needs surgical repair.

**Solution:** Our device is a new J-loop peritoneal dialysis catheter that has two pairs of silicone rings at a surgically strategic location. Our catheter can be fed through the endostitch using current endostitch technology and surgically adhered in the desired spot to reduce migration rates. This method simplifies the procedure and, coupled with a direct-to-consumer education and marketing campaign, can help reduce infection rates.

**Team Members:**
Udit Bhavsar  
Kyle Fordham  
Hunter Frederiksen  
Trent Parry  
Mitchell Peterson

SMARTBEAT

**Problem:** Sleep-related death is the leading cause of infant mortality in the United States. Current monitoring systems require a device to be placed on the baby or in the crib. These devices have a tendency to move out of position, causing false alarms or injury to the baby.

**Solution:** Smartbeat is a non-contact video baby monitor with breathing detection that alerts the caretakers when breathing rates become dangerous. The device uses advanced computer vision technology to accurately detect breathing rate, even when the baby is swaddled.

**Team Members (Utah State University):**
Jennifer Scucchi

$5,000 – Best in Engineering Award
SMART-PLATE

**Problem:** Patients with skeletal fractures affecting growth plates and growth disorders need monitoring to assess growth progress. Current methods for measuring progress using a guided bone growth system require the patient to return to the hospital or clinic for follow-up x-rays. This is costly and inconvenient for the patient and makes more frequent measurements less feasible.

**Solution:** Smart-Plate is a safe, non-invasive, at-home method for measuring movement of the growth plate and determining when correct growth has been achieved without frequent hospital or clinic visits for x-rays.

Team Members:
Dylan Blair
Jesse Nelson
William Pavia

SONOMAVEN

**Problem:** Congenital heart disease (CHD) is the most common birth defect affecting newborns throughout the world and the leading cause of newborn death in developed countries. Because prenatal screening for CHD has a poor rate of early detection, newborn morbidity and mortality are avoidably elevated, and more than $40 million is wasted annually.

**Solution:** SonoMaven is software that assists with the detection of CHD on routine prenatal ultrasound to improve early detection. By combining pathology detection with real-time guidance, SonoMaven eliminates the need for bulky simulation devices and time-intensive training, resulting in better disease detection and patient outcomes.

Team Members:
Robert McRae
**SURGERY CHECKLIST**

**Problem:** Preventable surgical errors are expensive and result in the loss of priceless lives. Paper checklists reduce complications but are difficult to use in practice.

**Solution:** Surgery Checklist is an inexpensive, easy-to-use electronic solution to this problem. It improves on the World Health Organization’s surgical safety checklist by automatically tracking data, pulling information and warnings from the EHR, and adapting to specific surgeries.

Team Members:
Yuxian Deng
Chen Mi
Jacob Nielsen
Mikaila Young

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**TIDYCUCK**

**Problem:** Menstrual devices are behind modern technology in their ability to be comfortable, reusable, and accessible. Reusable menstrual cups are very difficult to insert and remove and often cause discomfort.

**Solution:** TidyCup is a novel device that combines the reusable features of a menstrual cup with the comfort and accessibility of a tampon.

Team Members:
Jenna Langford
Lindsay Schuring
Paisley Tarboton

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$15,000 – Ensign College of Public Health Award
**TOTALLY TUBULAR**

**Problem:** Approximately 250,000 of the 1 million+ chest tube procedures performed annually experience clogging, resulting in complications and more than $6 billion in hospitalization costs. Pediatric chest tubes are especially prone to clogging. Non-clogging chest tubes are critical in obtaining better patient outcomes and saving money.

**Solution:** Totally Tubular is an improved drainage catheter that optimizes chest drainage and prevents clogging. The unique design uses a dual layer composite of polyvinyl and fluoropolymer to provide flexibility while minimizing inner surface roughness and polarity, with a streamlined connector that electronically induces shearing. The new device is low cost, requires minimal training, and is fully compatible with existing apparatus.

**Team Members:**
- Michael Adkins
- Trent Christiansen
- Anna Eden
- Pauline Knelle

**$5,000 – Ted Stanley Innovation Award**

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**TRAC NAVIGATION**

**Problem:** Current navigation systems for image-guided surgeries use a triplanar display that is non-intuitive, time consuming, and has a steep learning curve. These factors lead to longer navigation times, which may result in higher radiation exposure for patients and clinicians, increased time under anesthesia, and increased blood loss for patients.

**Solution:** TRAC Navigation is a software-based tool navigation add-on for existing image-guided surgery hardware. It reduces surgical navigation time by 63%, is easy to learn, and can help reduce mental load, allowing a better surgery experience for surgeon and patient.

**Team Members:**
- Niloofar Farhang
- Hema Sulkar
- David Usevitch
- Jennifer Wolken
**TRXOPICALS**

**Problem:** Adherence rates for topical treatments are very low, especially those involving multiple topical medications. Combination topicals are a current attempt to increase adherence, but they come with unwanted side effects.

**Solution:** TRxopicals organizes a topical regimen with perfect simplicity for patients. One-time use packets are combined into a 30-day box. Packet labels describe when and how they should be used. This will lead to better adherence and a completely customizable treatment plan that will minimize side effects.

Team Members:
Meganne Ferrel
Nicholas Flint
Sabina Imanbekova
Betty Zhou

**VALVUBLATOR**

**Problem:** More than five million people are diagnosed each year in the U.S. with heart valve disease. By 2021, 70% of patients with severe symptomatic aortic stenosis will be untreated, leading to associated health challenges including congenital heart defect, stroke, endocarditis, heart failure, or death.

**Solution:** Valvublator is a cost-effective, minimally invasive device for people suffering from aortic stenosis. Valvublator helps patients keep their own heart valve instead of receiving a prosthetic valve. Its innovative technology treats aortic stenosis by implementing a combination of techniques to restore valve function, including mechanical and ultrasonic cleaning and bioelectric stimulation.

Team Members:
Brett Burton
Alexandra Shamir
Betty Vowles
VITAPUL

**Problem:** Expiring medications and vaccines cost hospitals, payers, and patients unnecessary annual expense. In addition, expiring medications and vaccines limit access to health care for people living in isolated areas.

**Solution:** Vitapul injectables aim to increase the shelf life of life-saving medications and vaccines through an innovative powder/liquid mix, allowing greater accessibility and ultimately lowering lifetime costs.

Team Members:
Alejandro Blitch  
Teryn Holeman  
Alex Huhn  
Suzanna Ohlsen  
Brian Parker  
Trent Parry

$5,000 – Best in Business Award

MED UP!

**High School Competitors**

We're excited to continue involving competitors from local high schools. This year, West High School came with a well-planned project that was on par with its university competitors.

**Problem:** Non-adherence to medication leads to increased medical costs and worsened clinical outcomes. Few commercial products are widely adopted and almost all of them neglect pediatric patients.

**Solution:** Med Up! is a mobile app combining standard notification features with a novel reward and gamification strategy to promote adherence and foster improved self-management capacity for families with children with chronic conditions.

Team Members:
Zander Bagley  
Finn Baillie  
Charles Bonkowsky  
Samuel Bonkowsky  
Derek Che  
James Colbert  
Jacqueline Huynh

$1,000 – Young Entrepreneur Award
ADVANCED VIDEO LARYNGOSCOPE  
Legacy Team

**Problem:** Conventional video laryngoscopes do not provide support beyond the ability to see through the camera. Even for experienced clinicians, difficult intubations are common.

**Solution:** Our technology augments the video laryngoscope for the intubation task. It provides important contextual information, detects process steps, and takes action by calling for help after a set number of unsuccessful intubation attempts.

Team Members: 
Gabrielle Hoyer
Samer Merchant

$2,000 – Eccles and Marriott Libraries Award

BEACON SLEEP SOLUTIONS  
Legacy Team

**Problem:** More than 68 million people suffer from sleep disorders, such as sleep paralysis, sleepwalking, night terrors, and chronic nightmares. Current treatments for these disorders are inadequate and expensive.

**Solution:** The Dream Defender app by Beacon Sleep Solutions helps users alleviate disturbances by waking them up to escape their episodes. The app works in combination with our proprietary device, The Sleep Shield (patent pending), which is more powerful and affordable than smartwatches and other wearables.

Team Members: 
Joseph Arrington
Pace Cranney
Mica Sloan

B2B Bench to Bedside
**DECO-UV**

**Problem:** Decolonization of antibiotic-resistant bacteria is expensive, time-consuming, and contributes to further antibiotic resistance.

**Solution:** Deco-UV is a handheld UV light device that can decolonize patients of antibiotic-resistant bacteria at the bedside.

Team Members:
Azmi Ahmad
Cait Cooper
Dan Ellsworth
Kristen Saad
Brooke Zhao

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**DRIPSENSE**

**Problem:** Currently, there is no way for an anesthesiologist to know that an intravenous (IV) is flowing without visual inspection during a procedure.

**Solution:** DripSense is a simple, disposable device that allows anesthesiologists to remotely monitor drip IV systems. The device uses infrared technology to detect changes in drip patterns and alerts the anesthesiologist if flow ceases.

Team Members (Utah State University):
Todd Brown
Colton Creech
Dalton Dobson
Rick Larsen
Kaden McKenzie
**KNEEHARMONY**

**Problem:** Due to the demands of daily life and inconveniences of existing products, the complete elements of proper healing following knee surgery—rest, ice, compression, elevation—are often neglected during recovery. Noncompliance compounds the problem by prolonging physical limitation and pain, thereby prolonging return to normal work and recreational life.

**Solution:** The kneeHarmony™ is a fully portable rehabilitation system that provides enhanced therapy for patients suffering from acute knee injury or recovering from surgery. It consists of a lightweight and versatile knee brace designed to promote kinetic function, along with a modular cooling component to simultaneously accelerate recovery.

Team Members:
Jason Miller

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**NIPAYE**

**Problem:** Breast milk is proven to be the best nutritional choice for infants. However, 92% of mothers initially struggle with breastfeeding, while many become discouraged and give up breastfeeding. There is no tool on the market that naturally and effortlessly promotes and encourages breastfeeding.

**Solution:** Akoma by NipaYe is an adjustable solution that supports nursing mothers by supplementing the mother’s milk with donated breast milk or formula. Akoma supplements the infant at the breast while stimulating natural milk production for the mother, leading to a more positive nursing experience.

Team Members:
Brenda Diaz
**Problem:** In the U.S., one in 10 couples experience difficulty getting pregnant, and only 13% of women can identify when they ovulate. Current ovulation prediction methods are time-consuming and provide insufficient notice of the peak fertile period.

**Solution:** PreOv is an early stage startup focused on empowering women and couples in family planning. Our device is an intravaginal ring that measures changes to the cervical environment. Users simply insert the ring after menstruation and remove it after ovulation. Fertility data is accessed in an easy-to-read format using the PreOv software application. Our lower-cost product will make identifying the fertile window nearly automatic, providing advanced notice of ovulation so couples can plan intercourse at the optimal time.

2018 Grand Prize Winner

Team Members:
Joni Aoki
Young Hong

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**Problem:** Many medical conditions require head-of-bed (HOB) elevation. No low-cost product on the market can assist with automatic position adjustment in bed.

**Solution:** Sit Up is a cost-effective, inflatable bed wedge pillow operated via an electronic remote or a mobile phone. This home health care device can adjust the user’s position in bed at a ten- to sixty-degree angle range.

Team Members:
Stella Markova
Trevor Newsom
SURESTOP

Problem: Alcohol-related death is the third leading cause of preventable deaths in the U.S. Disulfiram is an acetaldehyde dehydrogenase (ALDH) enzyme inhibitor used to treat chronic alcohol abuse. Currently prescribed as a daily oral dose, Disulfiram causes patients to exhibit hangover symptoms almost immediately upon ingestion of alcohol. Although extremely effective at dissuading further consumption, Disulfiram prescriptions have steadily declined due to high rates of non-adherence.

Solution: Surestop injects Disulfiram into the peritoneum, where it slowly releases, ensuring adherence to treatment for up to three months. Surestop decreases toxic drug byproducts, alleviates the daily burden for patients and caretakers, and reduces the cost of Disulfiram treatment.

Team Members:
Ali Eisenbeiss
Bianca Rich

THE UP SHEET

Problem: Immobilized patients with prolonged duration of sitting or lying down are prone to ulcers due to lack of movement and stasis.

Solution: The Up Sheet incorporates wireless pressure sensors into a pad, which alerts patients and providers when the patient has reached a certain threshold of prolonged pressure. Our device will give the patient/provider an opportunity to move and prevent the development of static ulcers.

Team Members:
Tyson Broadbent
Nicole Winter
Trey Winter
VERSISNARE

**Problem:** Increased use of intravenous cardiovascular devices leads to higher incidence of broken, embedded, or lost intravenous foreign bodies. Complications associated with retained foreign bodies range from infection to cardiovascular injury. Standard approaches to remove these foreign bodies are invasive, costly, unreliable, and result in poor patient outcomes.

**Solution:** Versisnare is a universal vascular snare that improves procedural outcomes and reduces uncertainty when manipulating and removing intravenous foreign bodies. Variable loop sizes, working angles, and reciprocating capability aid in safely detaching foreign bodies from the vascular wall.

Team Members:
Stefan Niederauer
Hallie Thorp

VITA SENSORS

**Problem:** Sudden Unexpected Infant Death (SUID) is one of the leading causes of death in children under five years of age.

**Solution:** The Vita Sensors is a contact-free respiratory monitoring system that allows parents to monitor their children’s respiratory rate while they sleep, without the child wearing or being attached to a monitor. The device provides parents with real-time monitoring that can send an alert if irregular respiratory patterns are detected. The technology also has a market with in-patient psychiatric hospitals and opioid-prescribed patient monitoring.

2018 Runner-Up (former team name Sixth Sensing)

Team Members:
Justin Brunson
Mike Langell

$5,000 – Global Health Award
**Problem:** Following pelvic and abdominal procedures, two opposing tissue surfaces can become connected by thick fibrous bands of tissue called adhesions. These adhesions develop in up to 95% of patients following surgery, causing bowel obstructions, infertility, and chronic pain. There are no effective solutions on the market for laparoscopic surgery and only partially effective solutions in laparotomies.

**Solution:** XLynk Gel is a hydrogel adhesion barrier that is sprayed from a propellant device that stores two liquid components of the hydrogel—chemically modified hyaluronic acid and polyethylene glycol—in separate compartments. The delivery device will combine the two components via turbulent flow conditions. The newly formed gel will be sprayed onto the tissue surface, allowing effective in situ cross-linking.

Team Members:
Jordan Davis
Brody King

$20,000 – LEGACY AWARD
COMPETITION NIGHT
MONDAY, APRIL 8, 2019

Held at the Utah State Capitol Rotunda, the 9th Annual Bench to Bedside Competition Night was attended by a host of university, community and business leaders and innovation stakeholders.
SPECIAL THANKS TO OUR SPONSORS

CENTER FOR MEDICAL INNOVATION

SUSTAINING SPONSORS
University of Utah Health
Sorenson Legacy Foundation
Ray and Tye Noorda Foundation
Dell Loy Hansen and Dr. Julie Aiken

BENCH TO BEDSIDE

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Cathy Breiter
June Chen
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Phil Davidson
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Mark Durham
Kelly Echols
John Erdmann
Shawn Fojtik
Kirk Fowers
Andy Gotshalk
Eric Gourley
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GET INVOLVED AS A SPONSOR OR MENTOR

WE WELCOME COMMUNITY PARTICIPATION.
If you or your organization would like to get involved, please let us know.

JOHN LANGELL
Executive Director, Center for Medical Innovation, Faculty Sponsor of Bench to Bedside
john.langell@hsc.utah.edu, (801) 587-3221

MARTHA C. DAVIS
Director of Advancement
martha.davis@hsc.utah.edu, (801) 213-0941

Visit our B2B website:
uofuhealth.utah.edu/center-for-medical-innovation/bench-2-bedside

Center for Medical Innovation
University of Utah Health
10 North 1900 East, Eccles RM 24
Salt Lake City, Utah 84132
(801) 587-7281

Credits:
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