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**Columbia University (New York, N.Y.)**  
**\$10,000 Lemelson-MIT “Cure it!” Undergraduate Winners**  
*Highlight: A Powdered Additive for Disinfectants*



Photos courtesy of Columbia Engineering/Tim Lee Photographers.

**The Challenge:** Outbreaks of highly contagious diseases, including Ebola in West Africa and MERS in the Middle East, occur on an annual basis, and thousands of healthcare workers (HCWs) risk their lives to save the lives of others. HCWs are especially vulnerable to infection due to their close proximity to disease and are the highest risk group for infection. Currently, most disinfectants are transparent in color and it is easy to miss spots when spraying. Solutions on the market today also bead up and roll off of waterproof surfaces like personal protective equipment (PPE) suits for HCWs, often leaving gaps in coverage. The consequences of employing ineffective decontamination practices were especially evident during the Ebola outbreak in West Africa. More than 881 HCWs were infected with Ebola as a result of improper disinfection, of whom

513 died, constituting 4.5 percent of all fatalities. There is a critical need to optimize the process of decontamination and prevent HCW infections.

**The Solution:** Highlight, a powdered additive that is mixed into disinfectant solutions at point-of-use. Highlight comes in individual bottles that can treat one gallon of disinfectant, and costs approximately \$1 per unit. Highlight-enhanced disinfectants are colorized and highly visible. Highlight can fully cover surfaces to eliminate gaps in coverage and reduce the rate of evaporation. The powdered additive fades in color over time to prevent staining and indicates to users when decontamination is complete. Highlight can be readily incorporated into existing protocols without the need for new equipment or training, has been shown to kill West Nile Virus and Influenza A, and is currently being validated against a variety of infectious agents at the National Institutes of Health and other labs. Highlight has the potential to greatly improve the practice of decontamination during epidemic outbreaks and for daily use by hospitals, laboratories, first responders, and government agencies.

**Application and Commercialization:** The worldwide disinfectant market is an \$8 billion industry and growing annually at 6.7 percent as disease prevention has become increasingly important. Highlight holds a unique position within this market as the only additive that enhances the process of decontamination, bridging the gap between having a disinfectant and using it effectively. Kinno envisions Highlight having two major applications; first, daily use by hospitals, laboratories, transportation and government agencies, and second, disinfecting surfaces during epidemic outbreaks. Highlight is currently used by the Fire Department of New York as part of their HazTac/HazMat decontamination protocol responses and has been field-tested by healthcare workers in Liberia. Highlight was a winner of the USAID Fighting Ebola Grand Challenge, Columbia Venture Competition, Collegiate Inventors Competition, and VentureWell E-Team Grants, and Kinno has been recognized as one of Forbes 30 Under 30 in Healthcare.

In collaboration with USAID, the Kinno team recently traveled to Europe to demo for Médecins Sans Frontières (Doctors Without Borders) and the World Health Organization, and is scheduled to field-test with International Medical Corps in Guinea in June 2016. In addition, they are currently working with a large healthcare system in New York to explore applications for disinfection in patient rooms. Jason, Katherine, and Kevin aim to improve the process of decontamination globally and turn Kinno into a sustainable business with the potential to impact thousands of lives.