Mobile Discovery: In search of new antibiotics

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Rise in antibiotics resistance has severe and harmful effects on global health and our ability to treat infections in hospitals and communities. The number of new antimicrobial agents in the pipeline is at its lowest since the 1940s and there is an urgent need for using different methods to screen for novel antibacterial leads. Finding new bioactive molecules from microbial and plant extracts is confounded by the fact that most of the biosynthetic potential of an organism is typically lost in collected materials and laboratory conditions. We have developed a Mobile Discovery kit that provides a low cost option to directly explore chemical biodiversity of local ecosystems by rapidly detecting antimicrobial activity at the time of sampling. Use of saliva bacteria ensures that no biological samples cross the borders, as discovery and intellectual property rights remain locally. During the 2015-2016 pilot stage, 1100 kits were distributed to 749 students and 126 instructors in the US high school, college, and university settings in the form of group workshops and individual research projects. The kits were successfully used in both untargeted (Appalachian Trail, 5 months, 400 samples, 7 hits) and targeted (Isle of Arran, 2 months, 102 medicinal plants, 70 hits) field screening projects. These results validated the Mobile Discovery approach that combines research and education-based learning, and provided a powerful tool to identify novel antimicrobial agents from natural environments. Mobile Discovery program is open to public participation and kits can be requested from the program website (http://MobileDiscovery.org).