Description

Soil lead pollution is a threat to human life and health. Our hero, Bacillus subtilis, is fulfilling its mission through its superpower to purify the soil and protect human fitness, along with earthworms. Let's start this journey with engineered bacteria and earthworms.

土壤铅污染威胁着人类生命健康，而我们的英雄——工程枯草芽孢杆菌，正在用它的超能力与蚯蚓一起净化土壤守护人类生命健康，完成它的使命。让我们跟随工程菌和蚯蚓一起开启这段征战旅程。

In the laboratory

The journey begins in the laboratory with the cultivation of engineered bacteria. Under laboratory culture conditions, our engineered bacteria proliferate in preparation for the coming battle. We feed the cultivated engineered bacteria to earthworms, and then, the engineered bacteria enter the soil with earthworms and function to purify soil lead pollution.

在这场旅途开始于实验室培养工程菌。实验室培养条件下，我们的工程菌大量繁殖为即将到来的战斗做准备。我们将培养好的工程菌投喂给蚯蚓，工程菌随蚯蚓一起进入土壤开始净化土壤铅污染。

In the intestines of earthworms

Lead-contaminated soil eaten by earthworms encounters engineered bacteria in the intestinal tract of earthworms. Under the control of oxygen switch, the engineered bacteria secrete phytase to hydrolyze the phytate in soil, and release phosphate which can combine lead ions to form an insoluble substance, enabling lead ions to precipitate. Then, lead-contaminated soil can be purified.

在土壤中，蚯蚓摄食铅污染土壤进入肠道并与工程菌相遇，工程菌在氧气开关的调控下分泌植酸酶分解土壤中的植酸盐释放磷酸根，磷酸根与铅离子结合形成难溶物将铅离子沉淀，铅污染的土壤被净化。

In the wild

After the engineered bacteria finishing their duty in the intestines of earthworms, they may be released into the natural environment along with wormcast, which may cause additional biosafety problems. Therefore, our hero bacteria decide to suicide to guarantee biosecurity. This is the perfect ending of the journey.

我们的工程菌在蚯蚓肠道中完成了自己的使命，但工程菌可能会随蚯蚓粪便被排放到自然环境中，被改造过的工程菌可能会带来额外的生物安全问题。而我们的英雄在完成使命后，启动自杀，最大限度保障生物安全。到此这场征战完美谢幕。