

Project Summary for Grade School Students:

Currently, the build up of plastics in our land and our oceans are a threat to wildlife and our environment. A large amount of medical supplies are made of plastics that are only used once, thrown out, and can take decades to break down. Our group decided to focus on making a syringe that breaks down faster in order to help stop the build up of plastics. We used polylactic acid, which can be made from plants such as corn or sugarcane.

While designing this new biodegradable syringe, we also wanted to address another issue with syringes. Current syringes are not designed to form to the human hand and can be hard to hold or use for those with mobility issues. Many syringes are used at home and self-injected, so it's very important that the grips and plunger be as easy to use as possible. In order to achieve this, we added a curve to the outer grip and an indent in the plunger for the thumb to rest.

In the process of designing our syringe, we made a 3D model and printed several prototypes using 3D printing. We made several designs with different grips and plungers. These different syringes were tested by a group of people that provided feedback that determined our final design. We also tested how fast the PLA breaks down in soil and seawater.