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Development of a Vaccine Printer for Helicobacter pylori

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*Helicobacter pylori* is present in approximately half of the world's population, of which approximately 2% develop a type of gastric cancer. This cancer is often discovered when being in an advanced stage due to its lack of symptoms. Unfortunately, a vaccine hasn't been successfully developed against the bacterium. Therefore, the aim of this research is to develop the functional prototype of a DNA vaccine printer. Its parts were designed in the program NX 6.0 and built out of ABS plastic using printing technology at the University of Texas at El Paso. After being assembled, the printer will be programmed and tested with various substances starting from water to DNA plasmids. The printer is expected to deliver the substances at a considerable velocity and the use of needles or other invasive methods are avoided. The successful delivery of the substances will motivate the construction of a stronger polycarbonate printer. In the end, this research promises to demonstrate the effectiveness of a DNA vaccine and the development of a delivery method for a vaccine like *Helicobacter pylori*; this will enable further research in the delivery methods of vaccines against other infections and cancers.