

## Growing Objects

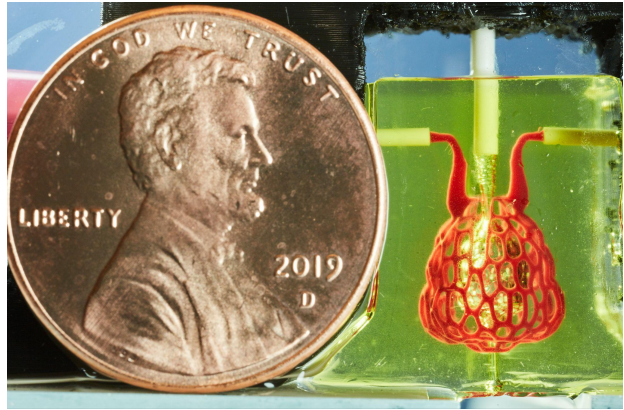
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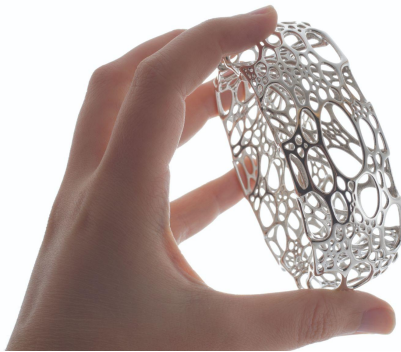
This talk will explore the mathematical underpinnings of Nervous System's diverse design projects, from jewelry to public art and jigsaw puzzles to 3D printed organs. Inspired by natural patterns, Nervous System creates computational systems that can create a myriad of unique designs. We translate these digital designs into physical products using a mix of digital and traditional manufacturing methods including 3d-printing, casting, and laser cutting. At the heart of these systems are mathematical models of pattern formation. We will discuss some of these systems including Hyphae, a space colonization algorithm, which we've used to create 3d-printed lamps and also blood vessel networks for biomedical research and Corollaria, an interactive tool for making anisotropic centroidally optimized Voronoi patterns, which we use for large scale metal sculptures. The talk will also delve into Nervous System's infinity puzzles which explore topological spaces. And lastly, we will talk about the fabrication strategy behind our recent gyroid sculptures.



**Figure 1:** *Infinite Galaxy Puzzle.*



**Figure 2:** *A 3D-printed alveoli-like structure.*



**Figure 3:** *A sterling silver Cell Cycle bracelet.*



**Figure 4:** *Corollaria Gyroid sculpture.*