

Title: Biodesign for a Sustainable Future: Overcoming Barriers to Biomaterial Adoption in Fashion

Authors:

- Emma Kowalczyk, MS Strategic Design and Management, Parsons School of Design, The New School, New York, USA (kowae015@newschool.edu) Phone: +1 518-331-7630
- Nij Balar (Corresponding Author), MS Strategic Design and Management, Parsons School of Design, The New School, New York, USA (balan138@newschool.edu, nijbalar19@gmail.com) Phone: +1 201-241-5628

Keywords: Biodesign, Healthy Materials, Systems Innovation, Sustainable Fashion, SCOBY (Symbiotic Culture of Bacteria and Yeast)

This research aligns with the following identified themes from ReMade:

- Systems Analysis and Material Flows
- The Regenerative Economy
- A Systems Approach to Overcoming Challenges in Supply Chain
- Industrial De-carbonization Techniques with New Technologies

Abstract:

The fashion industry is notoriously resource-intensive and environmentally damaging. Biodesign, with its focus on leveraging biological processes and living organisms, offers a transformative solution. This research explores the potential of biodesign to drive sustainable practices within fashion, using SCOBY as a case study.

Through a multifaceted approach, the project investigates the systemic barriers hindering the widespread adoption of bio-based materials. This includes a comprehensive review of existing SCOBY research alongside hands-on experimentation to understand the challenges faced by designers. Key areas of focus include manufacturer resistance to adaptation, securing partnerships and funding, and fostering transparency across siloed research efforts.

Employing a systems thinking framework, the research delves into core challenges within the biomaterial production and integration process. This includes supply chain optimization and logistics efficiency. Actionable insights will be generated to facilitate a seamless integration of biomaterials into the fashion industry, promoting a regenerative and sustainable future.

The project culminates in the development of a tangible product concept inspired by SCOBY, alongside a sustainable and viable business model emphasizing circularity and collaborative partnerships.