

## **Sustainable Innovation 2021**

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## **How Research & Development in Biotechnology is Introducing an Alternative Path in the Fashion Industry**

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The Global Footprint Network stated that in 2019, humanity had used the global natural resources 1.75 times faster than what the ecosystems can regenerate, meaning that humanity has surpassed nature's resource budget previewed for that year. The fashion industry is well known for being one of the most resource-intensive industries in the world, as it vehemently consumes and explores both natural and human resources. The extensive supply chains, dispersed through many countries, are moved by flexible laws, non-technical labor, poor labor conditions, cheap wages, low cost feedstock, low quality materials, and the lowest fabrication prices. The deliver of an accelerated, excessive and humongous volume of production, which fuels the fashion market globally every year, is only possible because of the maintenance of such conditions. Not only the high volume of production contributes to the climate crisis, but society's habits of consumption too. As social media leveraged many new businesses and amplified the access of so many into the market, the production and consumption are only more encouraged. The rising public demand for more items and cheaper products only aggravates the intensive use of natural resources and the poor labor conditions. Resources security is a topic to be urgently addressed, by all countries. More than just questioning the processes that are practiced in the industry, it is necessary to holistically rethink how the industrial systems are currently structured, supported by unsustainable practices and habits of consumption. Intending to mitigate the negative impacts of the industries, the industry's goals need to aim to establish more eco-friendly approaches, and renew process responsibly for the conservation of natural and human resources, in order to preserve the social well-being and environmental heritage. This paper aims to shed a light in how biotechnology-based businesses can offer innovations to the conventional processes of the fashion industry, through concepts of bioeconomy, circular and sharing economy, so that they contribute to more ecological approaches in the fashion industry. The paper will also present a short Case-Study from a brazilian startup named SUI that started to reflect about fashion, biotechnology and innovation, and intends to offer biofabricated products, processes and services. SUI has been researching natural dyeing methods with both plants and microorganisms in natural fibres, and obtained great results in laboratory with organic cotton, linen and viscose. This represents an innovation to Brazil, since there are few brands performing R&D in biotechnology to the fashion industry. SUI created a collection of natural dyed t-shirts in collaboration with a brazilian brand and is currently elaborating a Socio Environmental Report of the collection, to inform consumers with data from the production processes. SUI has the perspective to deepen its research and create a capsule collection exploring biomimicry design strategies and microorganism's dye.