

Overview of this technology

Applying the technology for bag-based plant cultivation to cells would allow the mass production of useful substances



**What are useful substances?**

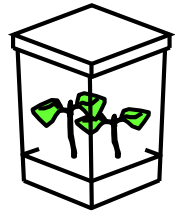
Pharmaceutical raw materials  
and functional ingredients



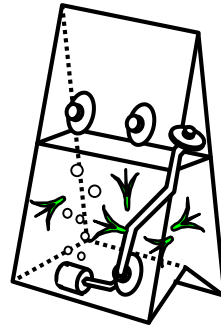
Overview of this technology

# Cultivation of plants and cell proliferation

plants



An individual plant



Bag-based cultivation

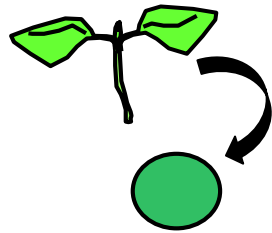


Propagated plants

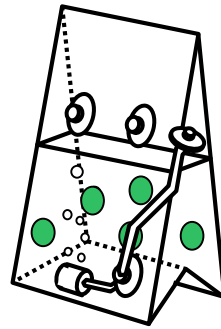


Agricultural products

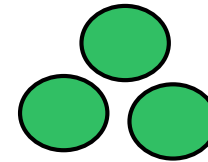
Cell



A plant cell isolated from plant



Bag-based cultivation



Plant cells

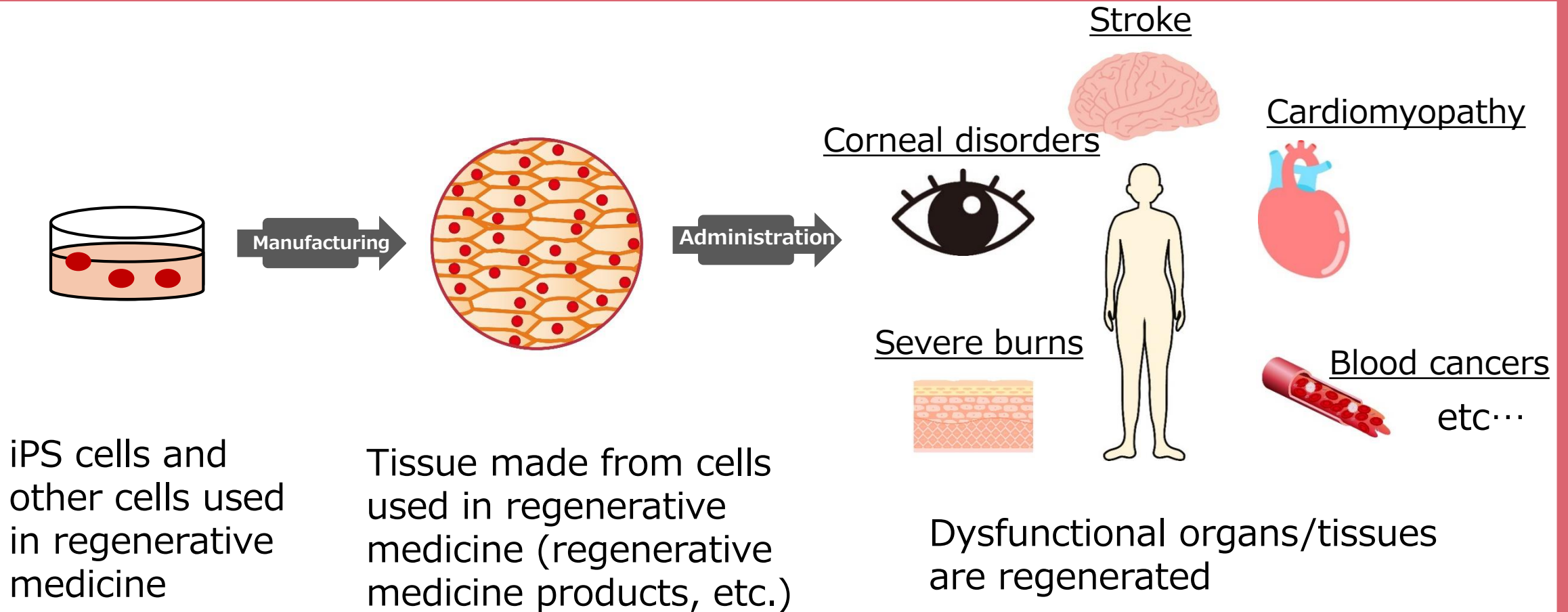


Useful substances

- Functional ingredients
- Pharmaceutical raw materials

## Background of this technology

Regenerative medicine is a type of medical treatment whereby dysfunctional organs and tissues are regenerated by inserting “cells” or “genes” themselves into the body

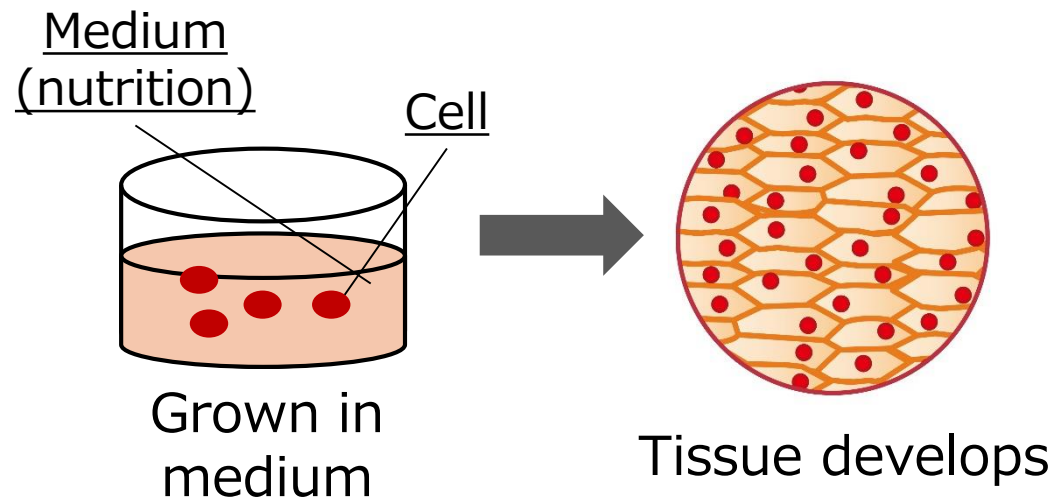


## Background of this technology

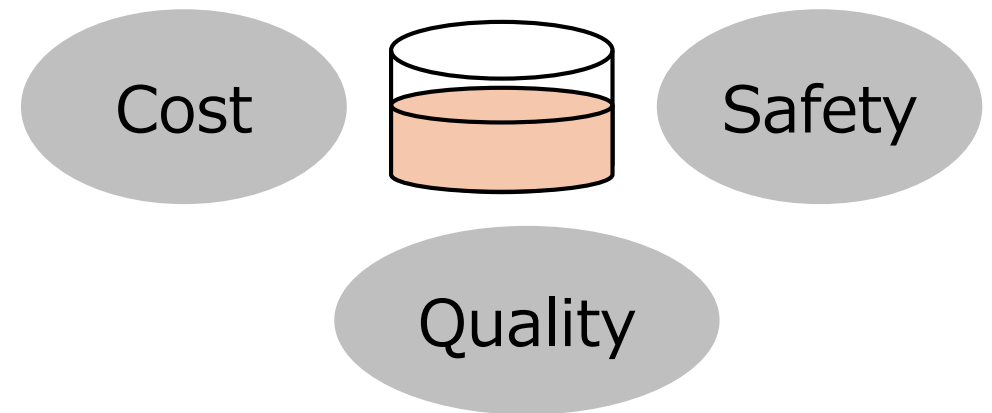
Medium are essential for regenerative medicine

~Problems with medium are one of obstacles to the development of regenerative medicine

### Medium to grow cells are essential



### Various problems related to the medium

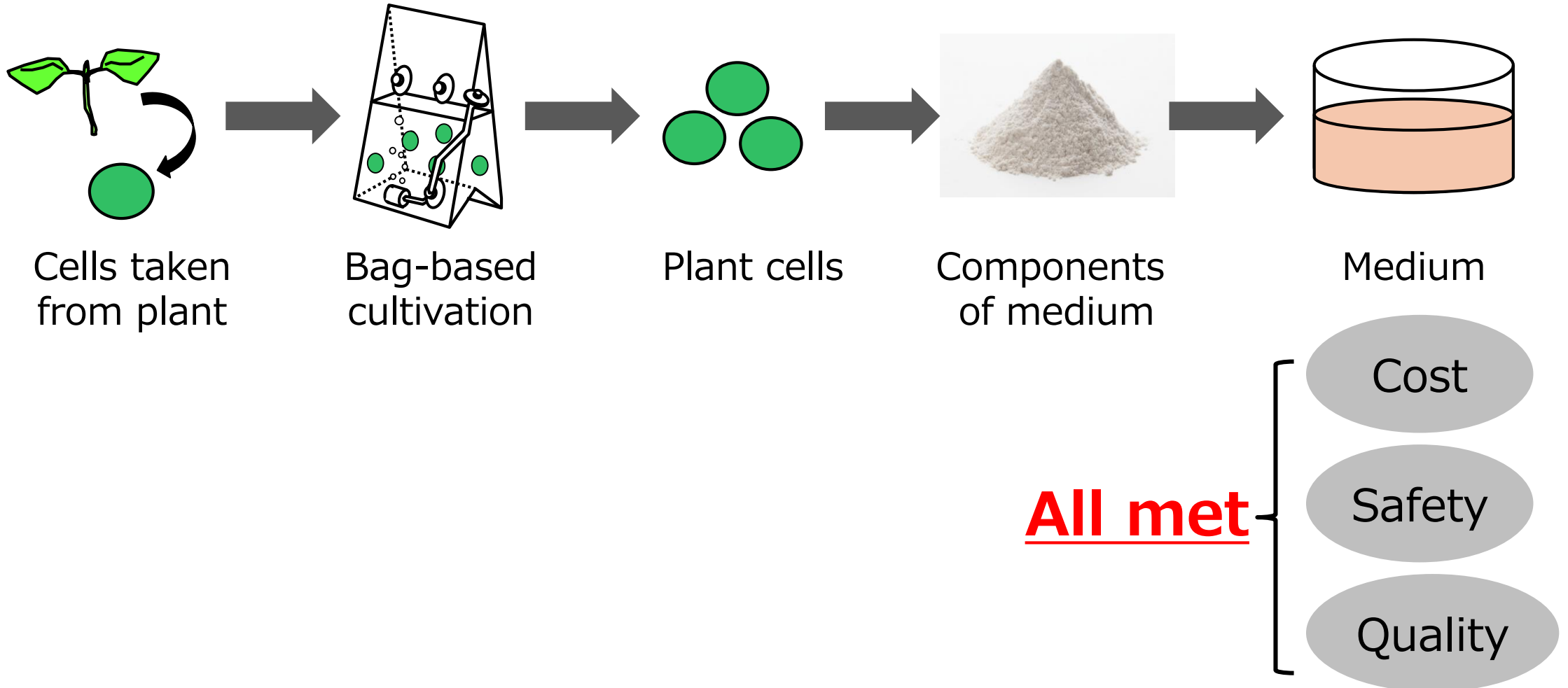


Cannot grow cells

No proper culture medium available

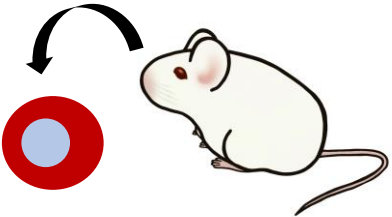
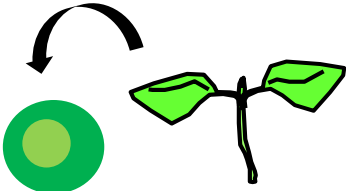
What can be achieved with this technology

Use of our technology for bag-based plant cell cultivation would allow producing medium for regenerative medicine meeting these challenges



## Uniqueness of this technology

While recombinant proteins such as medium components are often made in animal cells, those made in plant cells allow for virus-free, safe, easy, and inexpensive production.

	<b>Cost</b>	<b>Safety</b>	<b>Quality</b>
 <u>Animal cell</u>	Requires expensive raw materials <b>Inexpensive</b>	Virus infection risk <b>Safety</b>	Special facilities are required to ensure pharmaceutical-grade quality for both animal and plant cell-derived proteins
 <u>Plant cell</u>	<b>Can be produced with inexpensive raw materials</b>	<b>No viruses capable of infecting humans from plants</b>	<b>Kirin has already built these facilities</b> 