**Question for written answer E-000543/2023**
**to the Commission**
Rule 138
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Subject: Developing 3D and 4D bioprinting to replace animal testing

Like any 3D printing, 3D bioprinting is based on a computer file containing the data of the object to be printed. But in this case, the printed material is human tissue (cells grown in vitro) combined with bioink, all stacked in successive layers.

These printed tissues become 4D prints when the assembled cells interact together, vascularise and innervate to form a coherent and viable tissue. Artificial organs, models of skin, liver, bone or heart tissue are thus created for use in biological research or regenerative medicine.

Currently, the problem faced by scientists is to create complex vascularisation, capable of oxygenating and feeding organs in the long term.

But already, the toxicity of cosmetic products can be assessed with these bioprints.

This technique would make it possible to individualise medical treatments by directly testing the tissues of the patients concerned, without testing on animals. For example, in oncology, the cancerous tumours of a given patient could be reproduced in series to test the effectiveness of available chemotherapies.

Will the Commission support the development of this alternative to animal testing?

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