

# Novel glycoengineering technology gives qualitative leap for biologics drug research

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Researchers from the University of Copenhagen have discovered a way of improving biotech drugs. Better, cheaper and more effective drugs to combat cancer, arthritis and many other disorders.

This is the result of a ground-breaking new [technique](#) developed by a group of researchers from the Faculty of Health and Medical Sciences at the University of Copenhagen.

The method can improve a large number of so-called glycoprotein-based pharmaceuticals used to treat a variety of diseases. The technique has recently been described in one of the world's most distinguished scientific journals, *Nature Biotechnology*.

If glycoprotein-based pharmaceuticals are to produce the desired effect, the protein must be provided with a special sugar structure for enhanced therapeutic effect and duration. The production of glycoproteins is often based on hamster cells, which generate mixed and sometimes unusable sugar structures. Therefore, the production of such pharmaceuticals has so far been extremely laborious, lengthy, of varying quality and hence also very expensive.

However, the Danish researchers have now developed a technique whereby they are able to design and produce more uniform sugar structures faster and more cheaply for many different types of pharmaceuticals; a patent is pending. A minor part of the project has been carried out in collaboration with Novo Nordisk.

"Sugar structures are like a tree made from building blocks - and you could say that we have found a faster and more effective way of designing and building the tree. Previously, getting the structure just right could take years, whereas now it can be done in a matter of weeks. Also, we are able to design many more different structures than before," says researcher Zhang Yang from the Copenhagen Center for Glycomics, a centre of excellence at the University of Copenhagen.

## Great perspectives

The new technique holds considerable potential for improving many existing pharmaceuticals. Longer-lasting and improved [therapeutic effect](#) and, not least, faster and cheaper production.

"We have previously seen examples of optimised sugar structures making pharmaceuticals up to a hundred times more effective. One example is antibodies for cancer patients, which - by the way - is a very expensive form of therapy," says Zhang Yang.

**More information:** *Nature Biotechnology*. [DOI: 10.1038/nbt.3280](https://doi.org/10.1038/nbt.3280)

Provided by University of Copenhagen

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