

# [There is an incredible shift taking place in](https://assignbuster.com/there-is-an-incredible-shift-taking-place-in/)

There is an incredible shift taking place in medicine today. Traditionally, drugs that we’re used to seeing on pharmacy shelves are chemicalin nature – things like pain relievers, statins, and antacids. Although many ofthese can trace their roots back to the wild (aspirin, for example, is similarto a compound found in willow bark – and the first statin was discovered in afungus), the conventional pills that we are used to taking are usually madenonbiologically. What do we mean by this? Conventional medicines are created in factory settings, using other chemicals as building blocks.

The internal molecular structuretends to be well-defined and relatively simple. Now, however, science is taking a different turn – and is leaninginto a new class of drugs known as biologics. Unlike conventional medications, biologics are not synthesized chemically.

Instead, they are createdbiologically, using genetically engineered microbes or mammalian cell cultures. Biologics can be whole cells (alive or dead), they can be the biomolecules thatcells produce (like antibodies), they can even be comprised of some internalcomponents of cells (like enzymes). Essentially, a biologic – as the namesuggests – is not created with a rigid chemical structure, but is instead comprisedof biological components. While biologics aren’t new (vaccines are some of theearliest known biologics – or, at least, are some of the earliestlegally-regulated biologics), they are one of the fastest-growing categories ofdrugs in the United States. What makes them so different? Biologics often targetmolecular processes that conventional drugs cannot – allowing them to treat agrowing list of diseases like cancer, Lupus, Crohn’s disease, kidney failure, and many more. With all of this innovation comes a downside – biologic drugstend to be very expensive.

And because biologics are created from actualbiological material, it is challenging to come up with “ generic” forms of thesemedications (called biosimilars). Unlike generic versions of conventionaldrugs, biosimilars are often only similar to (not identical to) theircompetition, which means that they will require their own trials to ensure thatthey are safe and effective treatments. Which, in turn, means that it isincredibly difficult to create a biosimilar that comes with a lower price tag. As biologics continue to be developed to treat a range ofillnesses (including diseases that are notoriously hard to treat), theirlifesaving power will be limited at best if the cost makes them inaccessible tothe patients who need them.