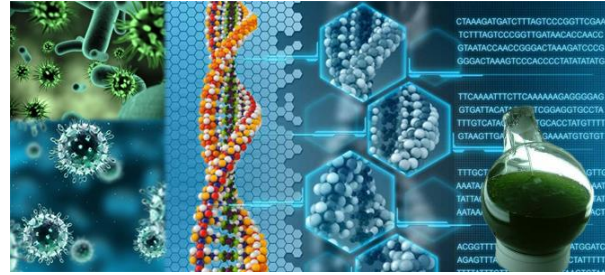




Your Health

Synthetic Biology ©

by Jack Grierson



Welcome to Your Health, brought to you by The Medical Frontier. Medical news simplified, on Twitter @medfrontier

The world of medicine is a big one, far bigger than most of us can even begin to imagine. During the next few weeks, we will address some of the less talked about branches of medicine like biomedical research, biotechnology, and bioengineering.

Today's article is on a relatively new field called synthetic biology. There are many ways of defining synthetic biology, as it is a subject that involves many different fields, including the ones described earlier. Most commonly it's known as the field that designs and constructs biological molecules and biological machines for industry or biological research.

Some examples of synthetic biology include: nanotechnology, genetic engineering and personalized medicine. Let's go into these in a bit more detail.

Genetic engineering: This is a very interesting field of medicine that can also be called genetic modification. Put simply, it involves changing the genetic makeup of cells. Genes are part of the DNA molecules that make up the characteristics you inherit from your parents. Changing these genes in the lab and putting them back into cells can cause some pretty crazy things to happen. For example, taking the gene that causes some fish to glow in the dark and putting it in mice can cause the mice to glow too! If we take this technology to the extremes we could get some amazing discoveries in the future. We've already used this technology to genetically modify yeast (fungi) to produce insulin for us, so that we no longer have to take it from pigs. In the future we could end up making humans that photosynthesize like plants do, or creating designer babies that are immune to all diseases and look exactly the way you want. Research is being made into age reversal and bodies that can self-repair as soon as you're hurt. Genetic engineering is an amazing, slightly scary, very impressive medical area that will be in the news more often in the future.

Nanotechnology: this is a very small field—not in the sense of the number of people studying it, but the actual research itself. It is defined as the study of matter on an atomic or molecular scale – basically very, very tiny materials. When you specialize in medicine it's called nanomedicine. This is a very useful field as it allows us to create new

ways of delivering medicine. A good example of this is cancer treatment. We can package toxic drugs that could harm the whole body into a nanomolecule and target specific cancer cells with it. This way, the healthy cells don't get hurt, but the cancerous ones die.

Personalized medicine: As you may have guessed from the name, this is the study of tailoring a treatment to an individual person. Today's medicine is designed as a 'one size fits all', which means that the drugs will work for most people but not necessarily everyone, as we all process drugs differently. We can use personalized medicine to get a more accurate diagnosis and an individual treatment plan. This means that hopefully you would have no or little side effects to your drugs, as they would be tailored to your body. Another example is breast cancer screening. If your family has a predisposition to breast cancer, you can now specifically research for cancer mutations to find out if you are at risk of getting the same cancer later on in life. Pretty amazing stuff.

This week's advice: New treatments and technologies are always around the corner; try to keep up with the latest research to make informed decisions.

Thanks again for listening to Your Health on EnglishWaves, provided by www.themedicalfrontier.com: Medical news, simplified.