studies the interaction of a given drug with an individual's characteristic (mostly inborn traits) and therefor determine its efficacy and safety based on those results, while pharmacogenomics focuses on how several drugs interact with a wide variety of genomes (expressed and non-expressed), therefore determining their efficacy based on the modification they have on the gene's expression pattern. So while both branches aspire to reach the same goal (coming up with the optimal medicine based on specific data), the approach they take is substantial.

Results and discussion. Pharmacogenomics: finding medicines faster. Traditionally, in order to get the final product (drug), chemist come up with different lead compounds, which are then tested in a number of animals or cell models in order to identify the optimal compound for human use, this. While this method of drug testing will likely never be entirely replaced by expression profiling, the new method will allow us to determine the drug action much faster and will likely provide us with extra information that might be needed in future drug discovery projects, and even help us discover new molecules based on the complex pattern of expression changes. As a good initial sign, toxicogenomics, which is a subcategory of the pharmacogenomic approach. Has already provided the science field with an impressive database from experiments with known toxicants, those experiments revealed expression patterns that most likely will be needed in the elimination of long term toxic compound, making the process of preliminary compound selection a much easier and faster task, which will ultimately speed up the process of creating new drugs. Pharmacogenetics: a more effective and targeted medicine for our patients as much as pharmaceutical industry has made great progress compared to 15 or 20 years ago, cases where patients have partial or no response to a prescribed drugs are more common than not, in some serious cases, they could even suffer from adverse effects and to allow ourselves to move forward, if we have to accept that health problems are a result of complex interactions between inborn and external and factors, then we could already be halfway through to the endgame, and by incorporating the genetic properties as well as the environmental variables surrounding an individual, we can pitch them into a narrow therapeutic window, allowing him to benefit of a more precise prescription (drug and dosage) that can highly improve the chances of a better response this phenomenon is covered by the term pharmacogenetics.

Conclusions. As mentioned in the introduction, trying to assess the future development of new technologies is a demanding and problematic endeavor. This is due to the wide range of factors that determine success and the high levels of technical, commercial, clinical and regulatory uncertainty that often mark early medical innovation. Because of this, previous work on technological forecasting has established that it is very difficult to assess accurately the prospects for an emerging technology much more than three years into the future. The best that can realistically be achieved is a crude assessment of which technologies are currently being successfully developed and used in the clinic, which ones may be adopted in the medium term (3-5 years) and which ones are unlikely to enter widespread usage in the next five years.

DOWN SYNDROME IN RELATION TO GENETICS

Sowunmi O. D., Luchko E., Naboka O.
Scientific supervisor: prof. Filiptsova.O.V.
National University of Pharmacy, Kharkiv, Ukraine
ekaterina_luchko86@ukr.net

Introduction. Down syndrome is a genetic disorder arising from a chromosome defect, causing intellectual defects and physical abnormalities including small head and tilted eyelids. It involves an extra chromosome 21, either a separate chromosome or a translocation onto another chromosome.

Aim. The aim of the study is to look at various genetic facts and statistics of Down syndrome. Researches have also been made about these disorders that are quite interesting. Down syndrome can be classified into 3; trisomy 21, translocation and mosaicism. Trisomy 21is the most common type of Down syndrome, it occurs when there are three, rather than two, number 21 chromosomes present in every cell of the body.

Results and discussion. Arguments have been raised whether Down syndrome is hereditary or genetic. Statistics have proved that for all three types of this syndrome, only about 1% can be traced to heredity while the 99% can be traced to some genetic factors.

The underlying disorder cannot be cured. Management depends on specific manifestations. Care should include genetic counseling for the family, social support, and educational programming appropriate for the level of intellectual functioning. Statistics have proven that you can find 1 out of every 700 births with this syndrome which makes it the most rampant chromosomal condition. About 6,000 babies are born with Down syndrome yearly. To adjust statistics, researches have now developed a new biosensor that could someday be used to diagnose this syndrome earlier in the fetus from the DNA of the mothers.

Conclusion. There are several famous people that have lived with this syndrome and have dealt with it properly such as American actor Chris Burke, British actor Tommy Jessop and so on. It has been discovered that people with this syndrome can live up to 60 years and even more.

There are some charity organizations that help to make people with this syndrome a valued member of the society, the organizations include; National Down syndrome society (America), Human right organization for individuals with Down syndrome, Down syndrome association (UK) and so on.

STEM CELLS: CHARACTERISTICS AND PERSPECTIVES USING THEM IN PHARMACY AND MEDICINE

Starchikova O. V.
Scientific supervisor: docent, Levashova V. M.
National University of Pharmacy, Kharkiv, Ukraine
vika55510@meta.ua, alexvs1610@gmail.com

Introduction. Stem cells (SC) consider undifferentiated cells capable of self-repairing and producing at least one type of highly differentiated descendants.

Aim. Explore ways to obtain, characterize stem cells and their prospects for use in medicine and pharmacy.

Research methods: terminological and structural-logical analysis.

Results and discussion. There are two types of stem cells – pluripotent embryonic stem cells (ESCs) that are derived from blastocyst, and adult stem cells are limited (multipotent and unipotent) that are detected in different tissues. These groups of stem cells differ from each other and from their descendants by many morphological features, localization, receptors of the surface, transcription factors.

All stem cells, regardless of their origin, have common properties: capable of separation and self-renewal for a long time, they are not specialized, may give rise to specialized types of cells. stem cells can be restored a lot of times. The process of multiple cell renewal is called proliferation.

One of the main properties of stem cells is that they do not have any fabric-specific structures that would allow them to perform specialized functions. stem cells can not, as a cell of the heart muscle, interact with other cells to supply blood to the blood vessels; it can not tolerate oxygen molecules like erythrocytes; and it does not conduct electrochemical signals to other cells (like nerve cells).

Scientists are looking for factors that allow the stem cells to remain undifferentiated. It took many years and mistakes to learn to cultivate stem cells in laboratory conditions, to prevent them from spontaneous differentiation into certain cells. Only 20 years after the creation of laboratory conditions for the cultivation of stem cells mice, learned to grow the human embryonic stem.

Processes in which non-specialized stem cells give rise to special cells are called diffusion. Only now is the study of the signals that start this process. they are divided into internal and external. Internal signals are controlled by the cell genes that carry encoded instructions for all cell structures and functions. External signals include chemicals from other cells, physical contact with adjacent cells, some extracellular media molecules. Investigation of the signals of differentiation of the stem cells is necessary, because they help scientists to grow cells or tissues that can be used to treat many diseases.