Empower
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CASE STUDY

- BIO MED/BIO CHEM

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Internship in an area of Bio Med/ Bio Chem.
Start Date: 14th of July, 2021 - 5th of August, 2021
Working hours per week: 10 hours


What are the most serious autoimmune diseases?

- Rheumatoid arthritis.
- Systemic lupus erythematosus (lupus).
- Inflammatory bowel disease (IBD).
- Multiple sclerosis (MS).
- Type 1 diabetes mellitus.
- Guillain-Barre syndrome.
- Chronic inflammatory demyelinating polyneuropathy.
- Psoriasis.

Rheumatoid arthritis. Rheumatoid arthritis (RA) is an autoimmune disease that can cause joint pain and damage throughout your body. The joint damage that RA causes usually happens on both sides of the body.So, if a joint is affected in one of your arms or legs,

Background

I am a 11th Grade Student with interests in biology and chemistry. I was interested in the internship as this was a learning opportunity that would gain me experience.

My internship was at a stainless steel manufacturer that has recently invested and delved into the world of biochemistry and biotechnology.

I was an intern on the topic 'Global Diseases from the 90's until COVID-19'. Being part of the department of interns, I had various assignments and tasks. They ranged from research topics on neuronal transmitters, to work like creating google forms.

The most valuable thing about my experience is that I learnt that communication is the solution to all problems.

The internship has affected my career goals. I am now sure that I want to delve in the same field as I feel I can manage my workload as well as enjoy whatever material I put out.

The internship helped me understand the idea of being professional, through communication and made me realize how important it is to be punctual and to have work ethic.

Learning Outcome

Don't have any recommendations for the company as they were extremely accommodative.

My Learning Outcome; The experience not only improved my knowledge on Biochem and Biotech, but also enabled me to realize that it is vital to balance all spheres of life being an employee. Biology, Chemistry and some amount of Physics from my school learning helped my internship immensely.

I enhanced my skills of communication and critical thinking. The tasks assigned to me were complicated and intricate, and just surface knowledge would not be enough for me to send in quality work. So, I had to clear doubts with my supervisor and had to do a lot of research on the topics.

The internship definitely met my expectations and well surpassed it.

I accomplished the strategy of being punctual and having a schedule, and constantly motivating myself to be better. I also cleared my mind of any doubts regarding the career I want to pursue in the future.

I liked multiple things about my internship- from how accommodative and understanding my supervisor was, to how the entire experience was a learning situation for me.

The only recommendation that I have to future interns would be 'It's okay to have doubts; the more you have, the more you learn.'

"IT IS OKAY TO HAVE DOUBTS; THE MORE YOU HAVE, THE MORE YOU LEARN."

Pandemic's of the 19th Century until COVID-19.

1832 — The **1832 cholera pandemic** killed about 18,402 people, spreading across Asia, Europe and the Americas.

Although much is known about the mechanisms behind the spread of cholera, this has not led to a full understanding of what makes cholera outbreaks happen in some places and not others. Lack of treatment of human feces and lack of treatment of drinking water greatly facilitate its spread. Bodies of water have been found to serve as a reservoir, and seafood shipped long distances can spread the disease.

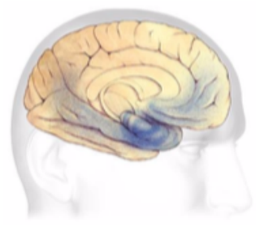
1918 — **Spanish flu** killed about 50 million people and caused additional pandemics in 1957, 1968 and 2009.

It is caused by the H1N1 influenza A virus. Lasting from February 1918 to April 1920, it infected 500 million people – about a third of the world's population at the

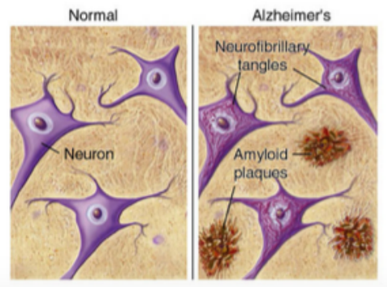
The damage initially appears to take place in the hippocampus and the entorhinal cortex, which are parts of the brain that are essential in forming memories. As more neurons die, additional parts of the brain are affected and begin to shrink. By the final stage of Alzheimer's, damage is widespread and brain tissue has shrunk significantly.

The Key features of the Brain with Alzheimer's disease;

In the early, mild stage of Alzheimer's disease, plaques and tangles begin to damage the temporal lobes in and around the hippocampus. The hippocampus is part of the brain's limbic system and is responsible for the formation of new memories, spatial memories, and navigation—and is also involved with emotions.



Plaques, medically called amyloid plaques, are beta-amyloid proteins that occur in multiple different molecular forms that collect between neurons. It is formed from the breakdown of a larger protein, called amyloid precursor protein. One form, beta-amyloid 42, is thought to be especially toxic. In the Alzheimer's brain, abnormal levels of this naturally occurring protein clump together to form plaques that collect between neurons and disrupt cell function.



Tangles, medically called neurofibrillary tangles, are insoluble twisted fibers found inside the brain's cells. These tangles consist primarily of a protein called tau, which forms part of a structure called a microtubule. The