

Log Book Entry Number 1:

Date: Oct.27,2023

Project Type: Research/Study

Topic: Biochemistry

Subtopic: Chemical reactions in the human brain
(neuroscience)

Title Of My Project: How Chemical Reactions In
Our Brains Affect Us Everyday!

Today's Focus: Today, I got started with my science fair project regarding the different chemical reactions that take place in our brains everyday by doing a bit of background research surrounding this topic, and I conducted some research about different neurotransmitters that are present in the human body, not just the brain to get an idea of what exactly these chemicals are and how they work. Additionally, I also signed up for the Calgary Youth Science Fair and wrote a basic outline of my project, consisting of information about what the title of my project is, my grade, what type of project I'm doing, what category my project falls under, what my topic is,

and a short summary of what my project is centered on.

Log Book Entry Number 2:

Date: Nov.16,2023

Today's Focus: Today, I created my problem statement/testable question for my project that I will aim to answer with great detail and insight in order to shed light on this topic and to have a clear direction of what my project should lead to by the end of my presentation. My problem statement that I will answer with the use of research, data, statistics, accurate and precise pictures, and a visual model of the brain is: How do chemical reactions in our brains affect us on a daily basis? My goal is that this problem statement will provide a concise and clear understanding of what the topic at hand is about and that I will be able to answer this question with as much accuracy, detail, creativity, and insight as possible so that my audience can absorb the most out of my presentation.

Log Book Entry Number 3:

Date: Dec.6, 2023

Today's Focus: Today, I mainly focused on starting the research element of my study project by researching and looking through reliable websites with accurate information regarding the central neurotransmitters in our brains, their functions, and the process of how they get released from your brain, and how it impacts the rest of your body in both positive and negative ways to identify what type of neurotransmitter it may be and what the good sides and downsides of it are to form a proficient understanding of these crucial chemicals, as this is the base of my entire project and it is essentially the fundamentals of neuroscience, and one must acquire this knowledge before moving on with the other components of the project.

Log Book Entry Number 4:

Date: Dec.14, 2023

Today's Focus: Today, I returned to the Calgary Youth Science Fair form online where I filled in

the Ethics Due Care 2A component of it, and I spoke about the purpose and reasoning behind why I decided to center my project around neuroscience and its importance in our daily lives (I chose this topic to conduct research about because I would like to unfold more solutions for various different mental health conditions around the globe since many individuals are sadly facing them everyday, and it really chips away at their physical, mental and emotional well-being, and I hope to try to make things better for them with my scientific findings), a more detailed description of my project and what I intend to focus on during the duration of my presentation, and where this presentation will take place, which is at our school.

Log Book Entry Number 5:

Date: Jan.2, 2024 (I did this component over the winter break).

Today's Focus: Today, I continued with my research part of my study where I studied and researched about the 4 main excitatory

neurotransmitters that our body heavily relies on for feelings of joy, well-being, ecstasy, serenity, contentment, excitement, and other positive emotions alike and they often stimulate a cell to increase its availability for receiving information: dopamine, serotonin, oxytocin, and endorphins. The reason why I decided to research this is due to the fact that neurotransmitters are often divided into two different categories: excitatory and inhibitory, and I thought that I could focus on the main “happy chemicals” that play a central role for the excitatory neurotransmitters so that you can know what most likely contributes to a lot of the positive moments in your life and how the process of them getting released happens.

Log Book Entry Number 6:

Date: Jan.11, 2024

Today's Focus: Today, I continued and started to finish up my research around the main excitatory neurotransmitters and how they work, and I started to do research on the main inhibitory neurotransmitter in your body, GABA, which gets

produced by another essential excitatory neurotransmitter, glutamate, which is commonly known for regulating memory, cognition, and your overall state of mood, and many receptors of it can be found in your central nervous system, showcasing the major vitality of this specific stimulating neurotransmitter. Overall, I did a bit more research on excitatory chemicals and started delving into inhibitory neurotransmitters, since that's another category of neurotransmitters that holds major significance in our daily lives.

Log Book Number 7:

Date: Jan.24, 2024

Today's Focus: I finished writing my research element of my project, and then did concepts and scientific principles surrounding my topic with backed-up evidence from trusted sources and statistics, and picked out the controversy of whether or not a mental health condition simply appears just because of a chemical imbalance (specifically a serotonin imbalance), or if many

other factors play into the manifestation of these conditions, and if yes, how does that happen, and how have the numbers of depressive symptoms in people increased during the pandemic? Moreover, I also finished writing my results/conclusions and my what's next portion of my project as well, where I sum up how chemical reactions really make a huge difference in our daily lives depending on what we do, and for my what's next, I intend to talk about how I plan to continue delving deeper into neuroscience to help many individuals mental health conditions, and how I think many people would be curious and interested to see my results since the brain is very complex and is a fascinating organ in our body to learn more about, and because many people are battling with these debilitating conditions, and hopefully this could encourage them to do their own research to learn what happens in your brain when your mental health is being affected negatively and to get professional help since they are experts in the field and are happy to help.

Log Book Number 8

Date: Feb.3, 2023 (I did this over the weekend)

Today's Focus: Today, I printed out all my information and glued them on my trifold where I designed it with decorations that resemble chemical reactions happening, and glued my pictures representing the human brain anatomy, 5 brain chemicals that have a heavy influence on your mood everyday, and my bar graph depicting the increase in mood disorders and anxiety disorders in people since the pandemic. I also have a mini brain model that shows an accurate visual representation of the brain so that I can describe each of the parts and their functions and where each chemical comes from.