



# Laminar Thought Flow

*The Department of Biochemistry Newsletter*

## *In This Issue*

Immune system  
and viruses

Intermittent fasting:  
The logic behind it

Mushroom Connect

Quiz

## Editorial

This issue contains articles that would help in understanding current trends, artwork by the students as well as a quiz to test your biochemistry knowledge.

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## How our immune system fights a virus?

The immune system never failed to amaze me. The fact that there are tiny cells and protein molecules in the body that are protecting us against terrible (possibly mean-looking) micro-organisms. This surely paints a picture of a fight of good vs. evil! Come to think of it, that is exactly what it is...!! "Protect self, destroy non-self" must be the mantra of these tiny soldiers in our bodies.

What better time to understand how viruses work than during a pandemic - that certainly was the idea behind writing this article...

Viruses are tiny, inanimate, biological entities that use the "host" organisms to manufacture more viruses. In doing so these so-called organisms can wreak havoc on the human body.

*cont'd p.3*

# An experience with Intermittent fasting

In this time and age, fasting (v. an act of abstaining from food and drink) seems silly. On one hand, we are surrounded by ready-to-eat meals and quick fixes for a hearty meal; whereas on the other hand, we are seeing so many diet-related health issues that are slowly creeping up to get to us... kill us even! Diabetes, heart diseases, obesity, cancer are just to name a few... But we are now being exposed to an age-old practice of fasting that might be our solution to maintaining good health. That being said there is still research going on in the field of medicine and nutrition concerning intermitted fasting - this is my experience with incorporating this practice into my daily routine.

As with all habits, starting this one was hard - but once the habit kicked in, it was like clockwork. Skipping breakfast (or dinner) helps you to maintain an easy 16-hour fasting window. The logic behind intermitted fasting is to give your body a longer period of time to allow the hormone glucagon to work. In a normal scenario where you are constantly consuming 3+ meals in a day, your body is constantly secreting insulin (this guy is what causes weight gain). As we know, insulin is responsible for reducing blood glucose - it does so by allowing glucose from the blood to enter into cells. Now, glucose if not metabolized ends up getting stored as glycogen/fats. Given the scenario, of us, consuming 3-5 meals a day, the stored glucose has no chance to get utilized and thus, remains stored. And that is where IF helps in tapping into these stored sources of fat/glycogen.

*cont d p.7*

## A day in a 16: 8 fast

6.00 am - wake up (earlier if possible)

6.30 am - a glass of warm water

9.00-10.00 am - black coffee/black tea without sugar

12.00 pm - Glass of water

12.30 pm - Lunch (fish, curry, rice, veggies)

3.00/4.00 pm - snack on some nuts, glass of water, or cup of black tea/coffee

7.00 pm - light dinner, water

9.00 om -Green tea/hot water

10.00 pm - Sleep



# How our immune system fights a virus?

*... cont'd from page 1*

While the virus uses the mechanisms present in the cell to create more viruses, the cell itself knows something is off about itself. The virus-affected cell triggers the immune system - the "home" is at risk of destruction. The infected cell will produce certain chemicals that call on the immune cells of the body to facilitate the clearance of the virus... even if it means its own destruction.

That's pretty much what's going on in your body (with a lot more specifics left out). With respect to covid19, it's not the virus in itself that causes severe reactions and symptoms - usually, it is the intensity of the immune reaction that causes it all. The immune system's response in the clearance of the foreign invader could cause a release of chemicals that could eventually end up destroying the host.



*Artwork by Ms. Grishma Pawar (F.Y.B. Sc.)*

Two faculties from the Departments of Biochemistry and Biotechnology - Dr. Aduja Naik and Ms. Hashma Mujiawar have collaborated on a start-up: "MUSHROOM CONNECT". The start-up aims at bridging the gap between mushroom growers in and around Goa and the availability of spawn - mostly that of the oyster mushroom variety. Tackling the issue of damage that occurs to the spawn during transport and transit when ordered from out of state has been a consistent complaint from mushroom growers in Goa. MushroomConnect focuses on the production of spawn, research, and development as well as training and consultancy services in this area.

On 31st July 2021, Mushroom Connect successfully launched Mushroom kits that allow people at home to easily grow and harvest their own oyster mushrooms - available in white and pink varieties.

You can follow them on Instagram - @mushroomconnect  
For more information, contact Dr. Aduja (+91 9067659632) or Ms. Hashma Mujiawar (+91 7066678706)

*More on p. 4*



## An experience with Intermittent fasting

*cont'd from p.2*

When practicing intermittent fasting, you allow your body to tap into the existing glycogen/fat stores from your liver first, and the rest of the body as well.

There are several ways one can carry out such a fast, the most popular being the 16:8 fast. These figures indicate that you do not eat anything for 16 hours of the day; your feeding window would be for 8 hours. In a similar way, you have the 20:4, 18:6, 5:2, etc. There are people that even practice the monk fast of 36 hours, and even longer (referred to as extended fasts) durations of fasting. During the said fasting periods, one usually consumes only water, and salts (and optional electrolytes, unsweetened of course). Most plans of IF often recommend that you include your sleep hours in your fasting window; rather than skipping all meals during the day - as shown in my sample of IF on page 2.

And now we come to the results/benefits:

Obviously, there was weight loss! Imagine my surprise... initially, I was skeptical about all the claims that I was hearing, as I did a fair amount of research getting into it. Tall claims!!! But the weighing scale wouldn't lie. The point I was worried about though was whether I was losing fat or muscle mass - a counter to muscle loss would be to exercise - recommended during the fasting window. There was obvious alertness that I noticed! The brain had now switched to using ketones instead of carbs/glucose as the energy source. I had more time on my hands - in the mornings! No cooking or prep for breakfast. Just a cuppa black coffee or hot water was enough to kickstart the day. And the food I was eating when it was fast break was more wholesome.

All in all, I'd say, everyone needs to try this; if not for any of the obvious benefits, at least for adding a little bit of self-control in our lives when everything is available at the click of a button!



## How well do you know your Biochemistry? Quiz

- Which of the following is a linear polysaccharide?
  - Glycogen
  - Cellulose
  - Starch
  - Amylose
- How is DNA different from other biomolecules?
  - forms multipolymer complex
  - can withstand high temperatures
  - replicate itself
  - does not degrade easily
- Hemoglobin has a
  - primary structure
  - secondary structure
  - tertiary structure
  - quaternary structure
- All enzymes are proteins, with an exception of
  - some RNA called RNases
  - some RNA called ribozomes
  - some RNA called ribozymes
  - all above statements are true
- Which of the following organelles are not membrane bound?
  - Ribosomes
  - Golgi apparatus
  - Smooth ER
  - Mitochondria
- After successful transformation of E.coli cells with pUC18 vector, blue colonies indicate
  - transformed with recombinant plasmid
  - transformed with non-recombinant plasmid
  - non-transformed with recombinant plasmid
  - transformed with pUC18 vector



We are filled with pride as we write this - Mushroom Connect is a partnership firm founded by Dr. Aduja Naik and Ms. Hashma Mujawar - both assistant professors at the department of Biochemistry and Biotechnology respectively. Their venture started back in December 2020 with the idea of making mushroom spawn available to those interested in mushroom cultivation. Today, it is a start-up company that deals with the production and sale of mushroom seeds (spawn) and grow-at-home kits. They provide consultancies and training sessions for those that may have a hard time cultivating mushrooms. Research and development is another side that the company plans to make progress in.

The main objective of the company is to spread awareness of how nutritional and healthy mushrooms can be, especially as a source of protein for those pure-veg consumers. They also aim to make it known to the masses that it is possible to grow their own mushrooms at home.

The company sells mushroom seeds/spawns and grow-at-home kits is in high demand. Mushroom Connect also helps farmers aspiring to begin their own mushroom cultivation by organising workshops and holding training and consultancy services.

Mushroom Connect was one finalist in Category 1 (starting up) of the "Business Diva" competition 2021, organised by Goa Chamber of Commerce and Industry and FiiRE. Their motto "Let's Grow", refers not only to growing mushrooms but also to the growth of the company and their customers.