Scientific Communication Writing Assignment

My topic focuses on DNA methylation of chronic low-grade inflammation, and its role in cardio-respiratory diseases. DNA methylation is a type of epigenetic modification that works by adding a methyl group to the cytosine base of chromosomes (Jin B, Li Y, Robertson KD., 2011). DNA methylation regions in promoters are capable of regulating gene expression through transcriptional silencing of the corresponding gene. DNA methylation known to be dependent on the environment: for instance, smoking can lead to DNA methylation in white blood cells (Kasapis. C., Thompson. P. D, 2005).

Low-grade inflammation, on the other hand, is a chronic response to foreign invaders such as viruses and bacteria. It results in producing a long-lasting yet low level of inflammation throughout the human body. Commonly speaking, the C-Reactive Protein (CRP) is the indicator of chronic low-grade inflammation, which is one of the main inflammation biomarkers present in humans (Danesh, J. et al., 2000; Dehghan, A. et al., 2007). Therefore, it can be concluded that when CRP level increases, inflammation presented throughout the body increases.

This topic is interesting because scientists traditionally focus on studying the environmental connections between chronic low-grade inflammation such as smoking and diabetes. Nevertheless, this topic explores the clinical pattern at a molecular level. It is also intriguing as it presents a real-life case of how DNA methylation is playing a role not only in regulating DNA expression at the microcosmic level but also in a broadening scope of causing physical manifestations.

The essay studies DNA methylation on the CRP gene and links it to chronic low-grade inflammation and other diseases, which is in the sub-topic of epigenetic study. Through analyzing the data, researchers are capable to understand the DNA methylation on CRP patterns in different ethnic groups, make the conclusion that BMI level creates a larger impact in creating CRP DNA

methylation than smoking does and that a strong correlation between CRP DNA methylation and cardiometabolic traits (Wielscher, M., Mandaviya, P.R., Kuehnel, B. et al., 2022).

However, there is little that the scientists know about other factors besides BMI and smoking. Meanwhile, the conclusion is unclear about whether the change in CRP level is a cause of specific traits, or the opposite since the sample is not collected exactly at the site produced (Ouchi, N. et al., 2003). The study of methylation and the specific CRP gene are crucial as they convey the significance of epigenetics. It is also beneficial for the understanding of larger issues in general as the topic helps explore the application in future medical use to reverse the impact of certain acquired diseases, or at least monitor the change of risks in patients.

Bibliography:

Jin B, Li Y, Robertson KD. 2011. DNA methylation: superior or subordinate in the epigenetic hierarchy? Genes Cancer; 2(6):607-17.

Wielscher, M., Mandaviya, P.R., Kuehnel, B. et al. 2022. DNA methylation signature of chronic low-grade inflammation and its role in cardio-respiratory diseases. Nat Commun 13, 2408.

Kasapis, C. and Thompson, P. D. 2005. The effects of physical activity on serum C-reactive protein and inflammatory markers: a systematic review. J. Am. Coll. Cardiol. 45, 1563–9.

Ouchi, N. et al. 2003. Reciprocal association of C-reactive protein with adiponectin in blood stream and adipose tissue. Circulation 107, 671–4.

Primary source's link: https://www.nature.com/articles/s41467-022-29792-6

I chose the topic because I am interested in molecular biology. Instead of studying popular genetic editing, I found epigenetic modification also worth noticing. The topic contributes to building a connection between the changes in molecular level and disease infection. Previously, DNA methylation is only a biological concept for me, but witnessing its application and how tracking its indicator is able to monitor the risk of getting cardio-respiratory diseases is intriguing.

Scientific Communication Writing Assignment Rubric – Peer Evaluation

your name: Grace Trembath

assignment reviewed: 28 - Eleanore

Using the rubric below, please evaluate each of your assigned news articles in each of the areas shown, filling out a separate evaluation form for each news article. Please highlight the part of the rubric text that explains why you chose a specific assessment category. In the "General Feedback" section at the bottom of this form, please include more specific feedback, including things that you liked as well as things that you feel could be improved upon and suggestions on how to improve them.

	Excellent	**Good**	**Needs Improvement**
Content: **Does the news article convey the writer's understanding of a biological topic?**	The news article introduces a biological topic and clearly illustrates the writer's understanding of the topic including what is known and not known about it and how understanding the biology associated with the topic helps us understand larger issues or concepts.	The news article introduces a biological topic and presents information about it, but the topic is not explained clearly or doesn't distinguish between what is known vs. what is not known or doesn't explain how understanding the biology associated with the topic helps us understand larger issues or concepts.	The news article does not illustrate the writers understanding of the topic and does not indicate what is known vs. what is not known or how understanding the biology associated with the topic helps us understand larger issues or concepts.
Audience: **Is the writing appropriate for the target audience?**	The news article avoids jargon and clearly defines terms and ideas for a non-expert audience.	The news article defines or explains some terms, but some key terms or ideas would be challenging for a non-expert audience.	The news article lacks definitions and explanations, making the topic inaccessible to a non-expert audience.
Organization: **Is the news article clearly organized?**	The news article is well organized and easy to follow with good transitions between the paragraphs.	The news article is generally organized and easy to follow but conceptual connections aren't always clear.	The news article is disorganized, and the information presented doesn't flow well.

Rubric continues on next page

	Excellent	**Good**	**Needs Improvement**

Format, spelling & grammar: Does the news article follow the recommended format and is it free of writing errors?	The news article follows guidelines for paper length and format and has been carefully proofread for spelling and grammatical mistakes.	The news article is outside the recommended length or does not conform to the formatting guidelines; the news article contains a small number of spelling and/or grammatical errors.	The news article is significantly outside the recommended length and does not conform to the formatting guidelines; the news article contains numerous spelling and/or grammatical errors.
Citations: Are the citations presented appropriately?	The news article contains appropriate in-text citations and a list of references for all source material.	The news article is missing either appropriate in-text citations or a list of references.	The news article is missing appropriate in-text citations and a list of references OR citations are missing for one or more sources.
Rationale for choosing topic: Did the writer indicate why they chose the topic?	The rationale for choosing the topic is clearly explained.		No rationale for the topic's choice is provided.

General feedback (5 points):

First, watch the formatting. The text should be black 12 point, (It is possible that my computer changed the formatting, but I am not sure),

This is good, but I think it is very heavy on scientific jargon. In the beginning paragraph it is very unclear as to what you are talking about, and is all around a little confusing for people who are not familiar with the concepts you are talking about. I also think you should refrain from using the first person, for example you begin by saying "for my topic" don't reference yourself.

I think this article improves as it goes, but the opening paragraph needs work in order to understand what is happening and to introduce the ideas you will be talking about

Overall assessment (excellent, good, needs improvement):
Good, but needs polishing