WORKSHEET FOR READABILITY AND HOW TO ACHIEVE IT

LEARNING OUTCOME: DEFINE THE TERM READABILITY

BECOME THE TEACHER!

One of the best ways to learn a topic is to teach it. Meet up with a friend or family member, and during your conversation, tell them about your favorite readability formula and explain what features go into measuring readability.

LEARNING OUTCOME: EXPLAIN THE COMPONENTS OF TEXT READABILITY

FOR THE FOLLOWING SENTENCES, WHAT ARE THE FEATURES THAT ARE LIMITING READABILITY?

In the cryosphere, viruses are much less known, but some data are starting to emerge, such as the investigations of viral ecology and evolution in Arctic cryoconite holes and a recent investigation in Arctic sea ice and ancient cryopegs which revealed viruses are abundant, predicted to infect dominant microbial community members, and encoded auxiliary metabolic genes that enabled host adaptations to extreme cold and salt conditions.

The sentence is long because it has more than one idea. It could be broken into two sentences. It also has an abstract noun (adaptations) and complex words (investigation(s) instead of study/studies).

Cerebellar granule neuron progenitors (GNPs) are an excellent model to study neuronal proliferation and differentiation regulation in brain development.

There are four abstract nouns: proliferation, differentiation, development, and regulation. Proliferation and differentiation could be converted to verbs by re-arranging the sentence.

PROTACs can discriminate amongst highly homologous targets, and can exhibit much greater potencies than expected, due to a catalytic mechanism of action, which can compensate for low binary binding affinities or poor cellular permeability, and allow for use of weak, non-functional inhibitors to serve as warhead ligands.

This sentence has multiple ideas, making it longer than necessary. It could be broken into two or three sentences.

The study of AM symbiotic processes involves the detection, visualisation, and quantification of fungal colonisation.

This sentence has several abstract nouns that could be converted to other parts of speech be re-writing the sentence.

In this study, a systems biology approach was applied to utilize high throughput drug screens to identify compounds active against meningioma cells.

This sentence has an unidentified agent and a passive verb construction (was applied). It could be revised to say "we applied a systems biology approach". It also has a complex word, utilize, that could be replaced with a simple word, use.

LEARNING OUTCOME: EDIT SENTENCES TO INCREASE READABILITY

COPY AND PASTE THE TEXT BELOW INTO YOUR FAVORITE WORD PROCESSER. FOLLOW THE STEPS WE DISCUSSED IN THE LESSON TO IMPROVE READABILITY, BEGINNING WITH FINDING THE BASELINE FLESCH READING EASE SCORE. HOW MUCH CAN YOU IMPROVE THE SCORE?

While iron (Fe) is usually abundant in soil, the solubility of Fe is diminished in alkaline soils, which can initiate iron deficiency chlorosis (IDC), a functional Fe deficiency where leaves are yellow in color instead of green in color. Plant species that utilize the reduction-uptake strategy, such as soybean [Glycine max (L.)Merr.], exhibit a tendency to have greater sensitivity to alkaline soils than grasses that utilize the chelation-uptake strategy and have a lesser sensitivity to alkaline soils. Approximately 30% of the earth

possesses alkaline soils, including certain segments of the North-Central region of the United States of America, and in those affected areas IDC is an important circumstance that imposes limitations on productivity of soybean and leads to losses in yield of $260 million annually. Mechanistically, soil alkalinity is primarily the final result of bicarbonate (Bic) and carbonate ions occurring in the soil; alkaline pH and Bic result in decreases in solubility, and in turn result in decreases in availability of Fe, and may also inhibit expression of Fe uptake genes and/or their functionality. IDC can be induced in hydroponic experiments by providing buffering of the nutrient solution at alkaline pH by utilizing Bic. IDC can be brought about in Bic-containing alkaline solutions even with Fe sources that remain available [e.g., Fe(III)-EDDHA] at quantities of soluble Fe that would be adequate if the nutrient solution were in the ideal pH range, thus, the effects of alkalinity extend beyond the simple decrease in Fe availability. Plants that are Fe deficient as the final result of suboptimal Fe supply at normal pH also possess yellow and chlorotic leaves, but it is not readily apparent that this chlorosis is equivalent to IDC under alkaline conditions. Most plant Fe nutrition investigations have induced Fe deficiency by imposing limitations of Fe supply in the normal, mildly acidic pH range of 5-6. With regard to these previous studies, a substantial number of investigations have identified and cataloged genes that demonstrate upregulation in roots that are responding to Fe deficiency in Arabidopsis thaliana and other plant species. Only a small number of transcriptomic, proteomic, or metabolomic investigations have been designed to include alkaline pH in combination with low Fe supply to result in induction of IDC. However, these investigations did not include the entirety of combinations of normal and alkaline pH with high and low Fe supply, thus, it is not readily apparent whether the results of these previous Fe deficiency studies can be applied directly to IDC studies that are aimed at improving IDC tolerance in alkaline soils. Our initial objective was to treat Fe supply and nutrient solution pH as separate variables in order to determine whether alkaline IDC conditions and low Fe supply affect expression of soybean root genes in an equivalent manner.

By the software I used, the FRE score was 22.6 for the text above. The original text below had a FRE score of 44.3.

While iron (Fe) is usually abundant in soil, its solubility is low in alkaline soils, which can lead to iron deficiency chlorosis (IDC), a functional Fe deficiency where leaves are yellow instead of green. Plant species that use the reduction-uptake strategy, such as soybean [Glycine max (L.)Merr.], tend to be more sensitive to alkaline soils than grasses that use the chelation-uptake strategy. Approximately 30% of the earth has alkaline soils, including parts of the North-Central region of the U.S. In this region IDC is an important factor that limits soybean productivity and leads to yield losses of $260 million annually. Soil alkalinity is primarily due to bicarbonate (Bic) and carbonate ions. Alkaline pH and Bic decrease solubility, and in turn availability of Fe, and may also inhibit Fe uptake gene expression and/or function. IDC can be induced in hydroponic studies by buffering the nutrient solution at alkaline pH using Bic. IDC can be induced in Bic-containing alkaline solutions even with Fe sources that remain available [e.g., Fe(III)-EDDHA] at quantities of soluble Fe that would be adequate in the ideal pH range. Thus, the effects of alkalinity extend beyond simply decreasing Fe availability. Plants that are Fe deficient from low Fe supply at normal pH also have chlorotic leaves, but it is not clear that this chlorosis is equivalent to IDC under alkaline conditions. Most plant Fe nutrition studies have induced Fe deficiency by limiting Fe supply in the normal, mildly acidic pH range of 5–6. Many studies have cataloged genes that are upregulated in roots in response to Fe deficiency in Arabidopsis thaliana and other plant species. Only a few transcriptomic, proteomic, or metabolomic studies have included alkaline pH in combination with low Fe supply to induce IDC. However,

these studies did not include all combinations of normal and alkaline pH with high and low Fe supply. Thus, it is not clear whether results of Fe deficiency studies can be applied to IDC studies aimed at improving IDC tolerance in alkaline soils. Our first objective was to treat Fe supply and nutrient solution pH as separate variables to determine whether alkaline IDC conditions and low Fe supply affect soybean root gene expression in the same manner.

LEARNING OUTCOME: DESCRIBE STRATEGIES TO INCREASE VISUAL READABILITY

For this exercise, go into the literature and look at various journal article PDFs. Notice the article layouts and how they have been designed for readability. Do you see differences between different journals? Which features are most helpful to you? If possible, go to some journal websites and download "online early" versions of articles that have not yet been formatted. Notice how the visual readability differs from that journal's formatted articles.

Next, try to find some scientific posters online or on your campus. Without reading the posters, notice which ones are more visually readable and which ones are less readable. What is different about them?