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Watching Dr. Christin Murphy's video and learning about her research inspired me to think about how much we can learn from nature. Before I saw it, I had heard a bit about biomimicry, but I did not know any specific examples. After listening to Dr. Murphy explain how her research on seal whiskers could lead to innovations in wind turbine design, my eyes were opened to how scientists can study the most amazing traits of animals and other organisms, then apply that knowledge to create technology we humans can use. Dr. Murphy's obvious passion for her job also made me think about how cool studying biomimicry would be, and has led me to consider it as a future career.

From Dr. Murphy's video, I learned how the unique structure of seal whiskers enables them to move through the water with reduced drag and vibrational noise. This allows all of the whiskers to be used for sensing water movement, rather than only the whiskers in the front. Dr. Murphy explained how this understanding can be used in wind turbine design, avoiding scenarios where the turbines in the front create turbulence that reduces the other turbines' ability to collect energy. This can greatly increase the effectiveness and efficiency of the wind turbines, meaning that more energy could be collected from a smaller area and fewer turbines. I think these models could also be applied to hydropowered turbines, perhaps for energy production on Navy or Marine Corps vessels.

After watching the video, I thought of several other potential uses of biomimicry, and though I don't know enough to tell whether they could be truly viable, I want to learn until I do have an understanding of what is possible. I've already thought of a long list of animal traits that I think would be fascinating to study, such as how the hydrodynamics of marine mammals could be used to engineer more energy-efficient Navy submarines; but, I specifically have several ideas about other situations where Dr. Murphy's discoveries about the structure of seal whiskers could potentially be applied.

As Dr. Murphy mentioned when discussing floating turbines, using the structure of seal whiskers for cables could reduce drag and movement of whatever the cables are anchoring. More hydrodynamic cables and cords would be useful in a variety of tasks that the Navy and Marine Corps carry out, as well as for research purposes. Also, if the cables were subject to less water resistance, they would not need to be as strong, meaning that cheaper, lighter, and smaller cables could be used and transported with ease, even in remote regions.

Seal whiskers create less turbulence in fluid than other mammalian whiskers, and using our understanding of how that works could help us create ships that produce less turbulence. This could lead to benefits such as increasing the efficiency of Navy ships, making it more difficult for the ships to be detected, and causing less impact to marine mammals and other aquatic animals by reducing human-caused disruption to currents and water flow patterns.

I was also fascinated to learn from Dr. Murphy that seals can use their whiskers to detect disturbances in the water flow around them, processing this information to learn about their surroundings in incredible

detail. To me, this sounds like a superpower, and I wish we had technology to do this. I can see myself in the future researching this ability in more detail; perhaps even working with an interdisciplinary team funded by the Navy or Marine Corps to engineer devices and systems that could use this principle to detect the surroundings of a ship or swimmer. It could revolutionize detection systems, as well as our understanding of currents and marine animal movement, and could probably be applied to even more fields that I simply haven't thought of yet. I can't wait to see what we learn with biomimicry in the future, and I plan to be one of the researchers on the cutting edge of these discoveries.