

Apologetics Homework Assignment 13

Inspired by Biology: Penguins

For today's assignment, you will need to read the devotions for January 5 and 6 from your new devotional book, *Inspired Evidence: Only One Reality* by Julie Von Vett & Bruce Malone. A copy of these devotions is provided for your convenience on the back side of this sheet.

1. The wing bones of most birds are light and hollow, designed for flying through the air. By contrast, what qualities do penguin wing bones have?

2. Rather than flying, what are penguin wing bones designed to do?

3. Penguins are closely related to other birds on the evolutionary tree of life (of the same class, *Aves*). The theory of evolution thus predicts the existence of "transitional" species across which the wing bones slowly evolved from the typical bird-like hollow structure to the uniquely penguin-like solid structure. Are there any known fossils or living examples of these transitional species?

4. How does the "tuxedo" design of the penguin's coloration help it to escape predators in the water?

5. What conclusion do such designs in nature invite us to draw?

6. What colors of light are filtered out by the colored droplets of oil in the retina of penguin eyes?

7. How does this color filtration improve penguin vision?

8. Why is the color orange a useful light filter?

9. What sorts of products have been improved by researchers imitating God's design of penguin eyes?

10. When you are trying to solve a problem, what question do the authors of this article suggest you ask?

Fun fact: the science of problem-solving by intentionally imitating God's design in nature is called *biomimetics*.

Memory Work:

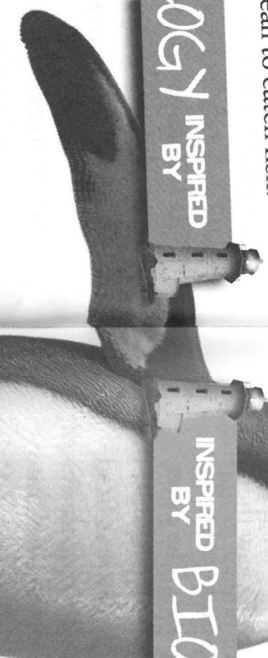
Psalm 111:2-3: Great are the works of the Lord, studied by all who delight in them. Full of splendor and majesty is his work, and his righteousness endures forever.

Have you considered the penguin? It is a bird, but it cannot fly. Why not?

The penguin dives for fish in the oceans. This bird does not have hollow, light bones but solid heavy bones with wings that act like paddles, so the penguin is equipped to swim. To swim and dive in the oceans with hollow bones would be like wearing a life jacket while diving to the bottom of a pool – very difficult, if not impossible. So, the great Creator gave the penguin solid, heavy bones which enable him to dive deep into the ocean to catch fish.

JANUARY 5TH

BIOLOGY INSPIRED BY



There is no known link between penguin wings and bird wings. After all, how do you slowly change an intricately re-enforced, light, hollow bone structure into a heavy, solid bone? How do you slowly transform a wing meant for flying into a wing perfectly designed for swimming? No transitions are known, and they are even hard to envision.

Penguins also sport a fancy tuxedo. This tuxedo allows the swimming penguin to disappear in a flash when a predator spies him. Leopard seals, fur seals, sea lions, sharks and killer whales are the main threats for penguins in water. When a penguin swims, the black side of his tuxedo is up. If a predator is swimming above the penguin and looks down, the black penguin tuxedo blends in with the blackness of the ocean. If the predator is swimming below the penguin and looks up, the white part of the penguin tuxedo blends in with the light surface of the ocean, again making it difficult for the predator to spot the penguin. God has designed the penguin for successful living in the water. When you see design and purpose, you know it didn't happen by chance. There is a designer and that designer is God.

Did you know that penguins wear sunglasses? Penguins that live in the Antarctic experience intense glare from polar sunlight. Yet, they have clear vision. Why? Within their retina are colored droplets of oil, and these droplets filter out blue and ultra-

violet colors which allow penguins to experience no glare and enhanced visual sharpness. Researchers are now copying the penguin's orange-colored filters to produce improved welding masks. Today's masks are orange in color rather than the

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older dark shields which obscured vision. Pilots, skiers, and sailors all don orange-tinted sunglasses and find improved vision in bright sunlight, fog, or haze. Why is the color orange a useful light filter? Orange-tinted sunglasses reduce or eliminate blue light, which is a major component of glare. Eye damage is also minimized by the orange filter's blockage of the UV light.

When we face a problem, such as not being able to see well in bright sunlight, we should stop and think: "Does something in nature have the same problem?" Observe how God solved it, and then copy God's solution! God is the master designer, the master problem solver. He solved the polar glare problem, and He can solve our problems. So, the next time you see a penguin, say "Hey, cool sunglasses!"

O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches.

- Psalm 104:24

Great are the works of the Lord, they are pondered by all who delight in them.

- Psalm 111:2