Confirmation Bias in Science

Read the article by scientist Chris Lee about “Confirmation Bias in Science: How to Avoid It.” Note Glossary at the end of that article for some terms that might be unfamiliar.

Discussion
1. What is “confirmation bias?”

N-Rays
2. Why do you suppose Blondlot announced his discovery of “N-rays” so quickly, without looking for weaknesses in that discovery first?

3. Explain why this “N-ray” discovery is a good example of “confirmation bias.”

4. Explain briefly how the “N-ray” was shown to be a false phenomenon.

Water Memories
5. What did Beneveniste report in the scientific journal Nature?

6. Why was Benveniste’s paper published though his conclusions were illogical?

7. What was the flaw in Beneveniste’s procedures?

8. Why do you suppose that the researchers involved Beneveniste’s work still perform this research on other homeopathic “remedies?”

9. What happens to scientists who refuse to acknowledge their confirmation bias?

Practice of Avoiding Confirmation Bias
10. How was most of the time spent during the two years that the author (scientist Chris Lee) and his team worked on his method to “see the impossible” in the new microscope?
11. The author says that the first step in science is to: Get an idea, discuss it with colleagues, then ...?

12. What’s the word we use for this effort to destroy a hypothesis? _______________ it.

13. Therefore, instead of trying to prove a hypothesis, scientists actually try to _?_ it. _______________

14. What’s the next step, if the idea survives this intense testing? _______________

**Risk and its Rewards**

15. Once the paper is published, where do scientists share their studies and conclusions? __________

16. Why do scientists do this?

17. How did the author react to a serious criticism of the work?

18. What do global warming skeptics and homeopathic researchers do when faced with such objections?

19. What does the author say that “is true of every field of science”?

20. How does this help the science?

**Science as a Contact Sport**

21. When scientists attack each others’ ideas, is this good for science, or not? Why?

22. What happens to scientists who keep seeking support for their ideas and try to publish their work, even after it’s been shown to have confirmation bias?

23. Have climate scientists carefully and seriously considered the objections of climate change deniers, and pointed out why those statements of deniers are false? __________

24. Why do you suppose climate deniers keep insisting they are right, even though nearly all working climate scientists have shown that those objections are completely spurious (wrong)?