The Scientist's Hand

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Scientist. Word, title, identity, prestige. Since its inception, researchers and theoreticians alike have vied over the right to be called *scientist*. Medical writers are no exception. Vested in the world of scientific thought, though not involved in bench work, medical writers hold in a unique position in the research community. But do medical writers have the right to call themselves scientists? The answer lies in the etymology of *scientist*, the development of the research specialist and the value of clear communication in science.

Less than 200 years ago,[1] when the word *scientist* was coined, scientists were men like Alexander von Humboldt, gentlemanly scholars who studied chemistry, biology, geography and physics as well as linguistics, philosophy and theology. These early scientists made their own observations, drew their own illustrations and wrote their own manuscripts, sometimes turning research into entire volumes of literature, establishing general scientific theory. With time, knowledge has expanded. Advancements in technology have given researchers new tools, increasing the rate of discovery and creating new avenues of study. Large scientific disciplines such as biology have fractioned into small disciplines, such as botany, genetics and biomedicine. Small disciplines, in turn, have further fractioned into specialties, and today's biomedical researchers build entire careers on a single molecular pathway or one cell type. The modern scientist, in other words, is a specialist. In order to achieve the same interdisciplinary

discoveries as the bygone generalist, the modern scientist must work together with other specialists.

Although the way we do research has greatly changed, the definition of *scientist* has changed little in the past 200 years. Nevertheless, both science and language are ephemeral. New coinages enter the English language, are judged by the speaking community and either exit the vocabulary or are integrated into daily use. As time passes, words need to acquire new connotations and definitions. The term *scientist* still generally refers to the individual experimenter, who works alone in the laboratory gathering data. This definition fails to recognize the modern team of specialists, working together to solve scientific problems. If we view the team of specialists as a single entity, as a single *scientist*, then the pharmacologists, immunologists and geneticists making observations and gathering data would be the *scientist's* eyes and ears. By extension, medical writers would embody the *scientist's* hand, organizing the data in to clear, understandable text.

The *scientist's* hand practices the art of writing, but is no less important to scientific progress than any other part of the *scientist's* body. For instance, to accurately describe symptoms of a disease, what they saw under a microscope or a new species of bird, scientists formerly had to sketch. Today, cameras have replaced the scientist's sketchbook. A scientist, working on a complicated microscope, uses the same principles of framing and light exposure to take a pictomicrograph as a photographer in a studio would use to take a picture. We call the studio photographer an artist, but we call the picomicrographer a scientist. This is because the picomicrographer is a specialist, taking a picture to convey a scientific message. The same logic holds true for medical writers. While they may apply the same mechanics as fiction and other

non-fiction authors, a medical writer uses scientific knowledge to accurately convey a scientific message. They are specialists in a team of researchers, solving problems through communication.

Clear communication is essential to scientific progress. Medical writers are scientific mediators, communicating between researchers and governments, the public and other researchers. Miscommunications of research to any of these audiences may have a devastating impact on the future of that research. Unclear wording may cause a government to deem an experiment unethical; an ambiguous protocol may cause disbelief of a result; an improperly explained theory may cause public fear. Good writing can speed the rate of discovery and acceptance of scientific theory whereas poor writing can cause the rejection of new a hypothesis. Put simply: good experiments poorly explained, are worthless. Had Charles Darwin written *On the Origin of Species* as a jumbled set of facts instead of an elegant manuscript with convincing arguments, the theory of evolution may have been delayed by decades. Thus, communication lies at the heart of all research.

Medical writers are the *scientists'* hand. They are not involved in bench work or experimental planning. Medical writers are communications specialists, not simply taking dictation, but using scientific knowledge and writing skills to solve problems. Good writing has the power to turn confusion into clarity, intelligence into brilliance and good science into great science. If the modern definition of *scientist* is: "A person who is trained in a science and whose job involves doing scientific research or solving scientific problems[2]," then medical writers have the right to claim the identity, the prestige and the title of *scientist*.

References

1. Ross S. *Scientist:* The Story of a Word. Annals of Science. 1962;18.2, 65-85

2. Merriam-Webster. (2015). Dictionary & Thesaurus HD (Version 3.3.2) [Mobile Application Software]. Retrieved from http://apple.com/appstore