From our perspective as medical research scientists who write, we have found the process of writing to be a further means of scientific discovery. We and our fellow scientists generate data using scientific methods in vitro ("within the glass" of test tubes and tissue culture dishes), in vivo ("within the living" animal models), and even in silico ("within the silicon" chips that facilitate computer calculations, modeling, and simulations). These experimental data, frequently supplemented with clinical data from patients and psychosocial data from target populations, are the raw material from which we produce grant proposals, manuscripts, and regulatory and public relations materials. In some instances, the content of our writing has been predetermined by the nature of the document: methods papers and regulatory documents hold few surprises for the scientists who initiate or write them. However, we have found that as we write reviews, original research papers, and grant proposals, our work involves an additional element beyond organizing, formatting, and clarifying content. As we attempt to craft intriguing and compelling stories from the data that we are given, we frequently find ourselves searching beyond the resources that inspired and directed the studies we have been asked to communicate. Similar to solving a jigsaw puzzle, as we assemble pieces (eg, individual concepts based on data, logic, or accepted views), scientific writing sometimes allows us to clarify the specific “shape(s)” of pieces that remain missing from the picture. In this manner (subject to time limitations and access to published and privileged data and databases), our scientific training and natural curiosity compel us to attempt to fill in these missing pieces and to communicate our discoveries with our collaborators in order to assist their efforts. Thus, we have coined the term in scriptio to describe this discovery process that takes place “within the writing.”

Although we believe in scriptio to be a high-yield form of scientific discovery, we are aware of the stark contrast between it and the traditional forms of experimental discovery. On the one hand, technically driven in vitro, in vivo, and in silico forms of discovery lend themselves to mechanization with the potential to improve the quality, quantity, and speed of data production. These technical advances have fueled the current deluge of “-omics” data, much of it yet to be fully processed and integrated into new and/or existing bodies of knowledge (jigsaw puzzles). In contrast, in scriptio discovery goes beyond technical skills and machine intelligence (both of which, in theory, can be programmed) and involves a combination of creative (original) and scientific (rational) thought. Generally, new concepts generated in scriptio are consistent with existing data. However, occasional challenges to reconcile conflicting data involve attempting to define discrepancies in experimental conditions (such as design, technique, and materials) and searching publications and databases for clues that allow us to work toward confirming, enhancing, or modifying current viewpoints and/or introducing entirely new ones.

Science and medical writers with strong science backgrounds are in a strategic position to leverage their expertise to integrate big and small data into the broader context of the existing literature, filling in pieces of the bigger picture and identifying the “shape” of puzzle pieces still missing. By employing in scriptio tools of discovery, writing scientists augment the efforts of their peers and help to expand and expedite the research enterprise as a whole. To date, funding sources have invested heavily in generating massive quantities of big and small data and in training and cross-training a productive scientific workforce. Unfortunately, the volume of discovery has not matched the volume of data, even though large data acquisition continues to be heavily funded. We propose integrating in scriptio discovery personnel as project team members who are proficient in mining databases and the literature and in performing secondary analysis as a means of supplementing traditional and emerging routes of discovery. In scriptio “writing scientists” have the potential to add value to the research enterprise and enhance scientific, medical, and financial gains.

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In Scriptio: Writing as a Means of Discovery

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