

Preface

For I can tell thee, though composing it cost me some labour, I found none greater than the making of this Preface thou art now reading.

(Cervantes, 1605)¹

You don't make any progress with your methodical repertoire? You want to give your work a new direction? You want to learn more about the methodical variety of a given field? Maybe the EXPERIMENTER can help you.

In writing the EXPERIMENTER, I wanted to write neither a textbook nor a pure method collection. Textbooks tell about everything that has already been investigated: they show the house of science. Method books (cookbooks) describe the individual stones and tools. However, the EXPERIMENTER aims to provide guidance in the construction, to convey what type of houses are currently in fashion, and to explore how much work the construction takes and how much is paid for it. It should indicate what methods are available, what they are or are not suited for, which research strategies can be pursued, how tasks are tackled, and how much work is likely to be involved. You don't put the EXPERIMENTER on the lab bench; you take it to bed with you to "philosophize" when the experiment has failed for the twelfth time or when you need new ideas. A strategy book, that's what the EXPERIMENTER should be. I have not achieved this completely, as in some sections it still resembles a method collection. Yet, the EXPERIMENTER does not overly delve into the details of the methods but recommends literature describing the methods in a comprehensive manner for practical work. This book provides only those techniques not found elsewhere.

The tactic of discussing the possibilities of methods while referring to other publications for their details has the advantage of brevity. It also encourages the reading and understanding of the literature and helps to develop a feeling for the right experiment at the right time. In addition, the inspirations of others inspire your own ideas. "Cookbooks" have their utility. However, it does not suffice to be able to perform, for example, gel filtration if you do not know when it makes sense to use it. And when you are inventing new recipes (i.e., methods), cookbooks are of little help anyway.

Admittedly, many authors document methods incompletely or incomprehensibly in their publications (from here referred to as papers). Some do this to keep the competition in their field at bay. Others do so because they are lazy or because of a lack of space due to page limitations for articles. I searched the paper jungle for the best, most current, most readable, and most reproducible methods, and I believe I have found useful instructions. I know many of these recipes or have tried them in my own kitchen. If you know new methods or better papers for a method, I would be grateful for a communication.

In any case, you should not approach papers as if they hold the holy revelation. Even the Lowry Protein Assay has not been examined and optimized in every direction, and a protocol that is optimal for protein 1 may not be so for protein 2. Treat methods circumspectly. Question them (why phosphate buffers, why incubate before with X-ase?). Upon first application it is actually advisable to follow a protocol exactly, but later a playful interaction with the recipe is more useful. Also, you should be wary of all assertions regarding advantages, speed, or sensitivity of the tests or methods. On the other hand, warnings about disadvantages should be taken seriously. Researchers write papers not to assist their colleagues but to receive their recognition and to extend their publication list. The tone of the EXPERIMENTER is pointedly unacademic.

1. These and all other quotes found in the book come from Miguel de Cervantes Saavedra's *The Life and Deeds of the Keen Nobleman Don Quixote of la Mancha*.

Finally, books on scientific research talk a lot about fascination, thirst of knowledge, and enthusiasm. You find little on endless pipetting, failed experiments, and lack of funding. Many years' work often leads only to the discovery that there is nothing to discover in the direction taken. Only luck, diligence, ingenuity, good mentoring, and intelligence—in this order—bring success at the lab bench. Thus, your adventures will resemble those of the knight errant: every day and Sunday you take your tottery Rosinante to a castle where the king is difficult, the efforts great, the results bewildering, the food bad, and setbacks the rule. However, this time of trial strengthens your soul. From the abyss of desperation you rise to the level of indifference, where gray rough streets lead to seemingly endless horizons. Don't let yourself be discouraged! The others also slave away unsuccessfully. It is normal at first that no result is in sight. Hang in there!

Hubert Rehm