The opposite of genomics

An intriguing new portrait was unveiled at the National Portrait gallery at the end of last year. It’s of Sir John Sulston who, until recently, was director of the Sanger centre and a prime mover in creating the first draft of the human genome. The artist, Marc Quinn, came to prominence in 1991 when he exhibited Self, a cryogenic sculpture which consisted of a cast of his head in his own frozen blood. To depict Sulston, Quinn used a rather different technique, adapting the methods of molecular biology to construct what he calls a conceptual genomic portrait. This turns out to be a wide silver frame enclosing a blot made from colonies grown from bacteria transfected with plasmids containing fragments of Sulston’s DNA. Traditionalists (who tend to react to the phrase conceptual art by reaching for their revolver) may need a word of explanation. According to the gallery’s press release, the portrait is intended to prompt the viewer to consider his or her own identity and the personal impact of the human genome project.

It’s amusing to guess what form these considerations might take. Perhaps scientists seduced by the power of the reductionist paradigm will enjoy the cleverness of the idea. If they subscribe to Walter Gilbert’s view that when we have the complete sequence of the human genome, we will know what it is to be human, they may feel that this marriage of art and science delivers a profound, almost literal, description of Sulston. But I suspect that others will find frustration in an image that contains enormous amounts of intimate, yet undecipherable, personal data. It is, after all, an odd notion to create a portrait that tells the viewer nothing about the life and personality of its subject. It’s as if the artist has failed to appreciate the difference between information and data—a bit like mistaking a list of ISBNs for the contents of a bookshelf.

There is a parallel here with Steven Rose’s warning about what he saw as the dangers of genetic determinism. Reacting to the casual way in which neurobiologists spoke of a gene for depression or a gene for violence, he argued that depression and violence were only labels designating complicated and variable patterns of behaviour. What’s more, different societies attached these labels in different ways: depression and violence were social constructs that varied in meaning depending on the historical and cultural contexts in which they were used. He thought it inconceivable that such complexity could be reduced to a linear code written in a four-letter alphabet. One of the points he made was that some levels of description and investigation generated more knowledge than others, and that the finest level was not necessarily the most useful. The information, for example, contained by a page of the QJM would be lost rather than enhanced by a chemical analysis of its paper and ink.
Whether you side with Rose or Gilbert, it’s going to be a while before doctors have the genomic sequence of their patients at their disposal. And in the meantime we must continue to rely on more old-fashioned ways of applying the findings of the laboratory to the clinical care of patients. In this issue, QJM publishes the first in a series of half a dozen ‘Masterclasses in medicine’. These articles, which show how the thoughtful application of fundamental concepts of energy and acid-base metabolism can make a real difference to the management of seriously ill patients, have been written by a group of authors from the Department of Nephrology, St. Michael’s Hospital, University of Toronto, under the guiding hand of Professor Mitchell Halperin. They’ve come up with the inspired device of introducing the ghosts of famous physiologists and biochemists from the past to remind us of those crucial principles of integrative physiology that ought to underlie clinical decision making. Each article starts with an actual case, and describes the clinical presentation and the sequence of events that followed. This month, Sir Hans Krebs, pictured here riding his cycle, asks some penetrating questions about glucose metabolism. He leads the reader to an understanding of why a young diabetic who arrived at hospital hyperglycaemic, but not ketoacidotic, was at high risk of developing cerebral oedema. Her management required the unusual step of—well, read the article to find out.

This is quite the opposite of treatment by guidelines. It’s the sort of medicine that can only be practised by physicians in possession of a perceptive eye and a keen mind. Although we hope that these articles will be valuable to doctors in training, we think that many experienced physicians will find them intellectually demanding too. They will be available free at the QJM website: http://qjmed.oupjournals.org.


References