

EDITORIAL

Launching a new journal is always a daunting task, fraught with uncertainty. There will always be those who ask 'why do we need yet another journal? What is *Biomarkers* going to add to the scientific literature?' Well, despite the undoubted increase in the number of journals published, none has yet addressed the area of science described by the term 'biomarkers'.

Biomarker research and development has burgeoned in the last few years. Toxicology in particular is at a crucial stage where effective biomarkers of all three types, exposure, response and susceptibility to xenobiotics, need to be developed. Markers of response and susceptibility have also become important in medicine. One of the challenges is to invent or discover biomarkers for situations where none currently exists. For effective biomarkers of all types to be developed, an understanding of the mechanisms underlying the interaction of chemicals with biological systems is necessary. Furthermore understanding of the relationship between biomarkers and the development of disease is also important.

It became clear to me that although existing journals would publish occasional papers dealing with biomarkers, there was no single journal serving the whole area. This field spans a number of disciplines, such as toxicology, and consequently important developments in one area perhaps underlying the development of a new biomarker, may not be appreciated by and communicated to research workers in another area. The situation is similar to that of foreign compound disposition, or xenobiochemistry some years ago. Then again Taylor and Francis, having accepted the need, launched a new journal, *Xenobiotica*, which covers this area and which has since become very successful.

As a result of my original idea for a journal dedicated to biomarkers, soundings were taken. The initial feedback was positive and so a questionnaire was mailed to over 300 scientists working in the area. Almost 100 questionnaires were returned, and of these 96% were in favour of such a journal, agreeing that existing journals did not fulfil the need. It remains to be seen whether we are right but I firmly believe we are and the number and quality of the manuscripts received to date and appearing in this issue confirm that belief.

The few negative comments received in response to the questionnaire seemed to be from those research workers considering only the area of biomarkers of exposure to carcinogens resulting in DNA adducts for example and therefore primarily relevant to cancer. There is a journal which includes papers in this area (*Cancer Epidemiology, Biomarkers and Prevention*) but papers on markers is not the sole remit of that journal. Furthermore the biomarker field is far more extensive than just human cancer related studies as it includes research on other organisms and relates to other pathological or biochemical effects.

What will the journal cover? The term biomarkers could include many disparate parameters and so it was decided to restrict the journal to biochemical markers and those of actual or potential importance in relation to xenobiotic exposure. There has been some debate about the definition of biomarkers and it seems clear that interpretation of the term, particularly in relation to biomarkers of exposure varies between research workers in different areas. Those in ecological/ecotoxicological circles may consider that biomarkers of exposure encompass biochemical *effects* whereas those concerned with human exposure and health regard biomarkers of exposure as indicating the amount of the substance to which the human is exposed. To my mind and for the purposes of this journal there are three types of biomarkers: of exposure, of response and of susceptibility (Schulte 1991, Timbrell *et al.* 1995).

Biomarkers of exposure indicate that exposure of an individual or organism to a xenobiotic has occurred and to what extent. Ideally they will be particular metabolites or adducts indicating *interaction* with the *biological system*, although the parent compound will have to be measured if it remains unchanged. The value of such markers is that they should not only indicate current or past exposure to a chemical but also the 'internal dose', ideally of the biologically active and therefore relevant compound. Thus adducts with DNA as a target molecule or with protein such as haemoglobin which may be a surrogate or a real target would be included in this category.

Biomarkers of response are indicators of biochemical change of actual or potential toxicological importance to an organism resulting from exposure to a xenobiotic. For example induction

of a protein such as heat shock proteins or cytochrome P450 which may or may not have toxicological importance, would be a good example. The ideal biomarker of response will detect early, potentially adverse changes after exposure to xenobiotics before they become irreversible.

Biomarkers of susceptibility are those markers which indicate that an organism may be more or less susceptible to adverse effects following exposure to a particular xenobiotic. In this context genetically determined enzyme polymorphisms such as the acetylator phenotype in humans or the possession of the *Ah* receptor in animals would be considered biomarkers of susceptibility.

Use of combinations of biomarkers of the same or different categories may in some cases be more effective and necessary than a single marker.

The first issue of the journal includes papers covering all three areas.

As well as publishing minireviews and original articles discussing data relating to one of the three categories of biomarker, the journal will also include articles and short communications describing new methodology for the determination of potential and established markers of exposure, response or susceptibility. The dissemination of information

about novel markers or potentially novel markers is one of the aims of the journal.

Any new journal suffers initially from lack of awareness of its scope, contents and standard. We hope to redress this to an extent by having the contents page freely available on the internet/world wide web (Taylor and Francis Home Page), and the titles of some of the future papers will be published in each issue.

The success of a venture such as launching a new journal will depend on our responding to input and suggestions not just from the editorial board but also from the scientists in the biomarker field who submit manuscripts and who read the journal. I encourage all those in this exciting, highly relevant and expanding field to submit manuscripts and to comment on the new journal.

Editor

References

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