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EDITORIAL

Over the last 10 years our understanding of glycan structure and its role in biological processes has increased immeasurably. This advancement has gone hand-in-hand with the development of better techniques and new equipment for the investigation of glycan-containing molecules and an increasing awareness of the involvement of glycosylation in many pathological processes. As an example of the recent interest in this area, last year a search of the literature on glycosylation and related topics produced over 6000 references.

It appears that the glycan structures of a molecule can produce a myriad of glycoforms that are affected by pathological circumstances. Much work is still required to define these glycoforms more precisely and to understand the regulation of their synthesis and turnover and the role they play in the aetiology and progression of the disease. Some changes in the glycosylation of serum proteins—such as the reduced galactosylation of IgG in rheumatoid arthritis, the reduced sialylation of transferrin in alcoholism, and the non-enzymatic glucosylation of haemoglobin in diabetes—are quite well documented. Others, such as the changes in fucosylation and branching of oligosaccharides of serum glycoproteins in cancer, liver disease and inflammation, are only starting to be understood. Glycosylation changes on the cell surface are also of great relevance to disease, as highlighted by the recent discovery of carbohydrate-mediated cell/cell interactions which are important in inflammation and possibly cancer metastasis. Clearly, many other interactions of this type remain to be discovered, and such studies will have important consequences for our understanding and treatment of disease processes.

This new journal has arisen from all these developments and is dedicated to understanding the role of glycosylation in disease, to establishing new diagnostic procedures to monitor disease processes and to the discovery of new therapeutic agents which interfere with glycan interactions. We know that many—perhaps too many—new journals are launched each year, but in this case we felt that there was an overwhelming need to bridge the gap between the carbohydrate biochemist and the clinical investigator of glycoconjugates, a role that is not fulfilled by any existing journal.

It is the proposed aim of the Editorial board to publish exciting and original work rapidly, whilst maintaining the highest of editorial standards. It is appreciated, however, that by virtue of the discipline involved, some studies will be empirical in nature. This will be quite acceptable as long as validated methodology is used, adequate and sufficient controls are investigated, and the data are carefully interpreted.

The articles and the meeting abstracts (*Glycobiology: New Perspectives on Human Disease*, Bethesda, MD, USA, 13–15 September 1993) in this first issue are good examples of the variety of research areas that are within the scope of the journal, but this is by no means an exhaustive list and in the future we hope to cover many other areas. The content of the article ranges from methodological development to molecular biology. In the methodological field, Van der Linden *et al.* describe the application of a new lectin-affinity electrophoresis technique to the isolation, in milligram quantities, of different glycoforms of α_1-acid glycoprotein from inflammatory sera. This procedure opens up the way for more detailed analytical studies of the glycosylation changes of serum proteins in diseases. In the molecular biology field, Yang *et al.* identify a missense mutation that leads to complete deficiency of α-L-fucosidase and would account for fucosidosis in carriers of the mutation.

On the diagnostic side, Naitoh *et al.* report a clinicopathological study of a newly-generated monoclonal antibody that reacts simultaneously with a number of fucosylated antigens. This antibody is highly positive for colorectal cancer and its intensity of staining is significantly related to disease progression. Dargan *et al.* report another cancer study, this time showing that the fucosylation of serum haptoglobin in ovarian and breast cancer is closely correlated with disease progression, whereas other glycosylation changes are probably linked to chemotherapy or anti-inflammatory response.

In the pathogenesis of disease it is important to

understand the role played by tissue glycosylation. Two papers in this first issue are examples of such an approach. Baydanoff and his co-workers report on the rate, extent and stability of non-enzymatic glucosylation of α-elastin isolated from the human aorta of healthy individuals. This is the first account of the glycation of this protein, a finding which could have important implications for future studies of the aging process and diabetic complications. In another paper, DiIulio *et al.* show that decreased expression of epitectin, a mucin-type glycoprotein, on the surface of human carcinoma cells is associated with reduced tumorigenicity in athymic mice, although it appears that this change is related to a total reduction in glycoprotein production rather than a change in glycosylation.

A research area will only develop if it is continually nurtured with compilations of fresh observations and new ideas. These are provided by two review articles. In one, three of the Editors (van Dijk, Turner and Mackiewicz) describe the occurrence, regulation and possible function of the changes in the glycosylation of acute-phase proteins in relationship to a number of different diseases, discussing much of the recently collected information on this topic. In the other, which is more controversial and speculative, Margni proposes an original explanation for co-precipitating antibodies based on the asymmetric glycosylation of the Fab region.

Glycosylation & Disease is an international journal which covers a wide range of disciplines and which aims to publish articles within 3 months of their receipt. We believe that this will lead to a more rapid exchange of ideas, to unusual and imaginative areas of research, and to new international collaborations. The initial response to setting up the journal has been very enthusiastic and we are confident that exciting times lie ahead.

Graham A. Turner