No need to teach an old frog new tricks

Normal Table of *Xenopus laevis* (Daudin)

edited by P.D. Nieuwkoop and J. Faber

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Nieuwkoop and Faber's *Normal Table of Xenopus* must be one of the most highly quoted works in vertebrate development literature. It was first published in 1956 at a time when relatively few laboratories used *Xenopus* as an experimental animal. The great success of the German school of embryologists, based on Spemann, Holtfreter and many others, was still very influential and amphibian embryologists still favoured the use of newts or salamanders (*Triturus* spp.) or frogs and toads (*Rana* and *Bufo*). But at that time, it was clear that the very poor availability of embryos from newts and frogs, limited to only a few months in the year, greatly restricted work.

Three great advantages of *Xenopus* as an experimental animal were beginning to become clear: (1) the availability of fertile eggs throughout the year, due to the ability of *Xenopus* to respond to commercial preparations of gonadotrophic hormone (whereas *Rana* spp. will produce eggs only after injection of pituitary extracts of other frogs, necessitating the sacrifice of many frogs to obtain a few eggs); (2) the ease of maintenance of *Xenopus* in the laboratory (it is relatively easy to feed and clean a permanently aquatic animal, rather than to have to use terraria of the kind needed for *Rana* spp. or newts); (3) the shorter life cycle of *Xenopus* (the one year required for *Xenopus* is much better than three or four years required for *Rana*). At about that time, French embryologists, notably Gallien, had established *Pleurodeles* as an acceptable laboratory animal. While still used today, newts of this genus have remained a speciality of a few laboratories, especially in France. For these reasons, the production of Nieuwkoop and Faber's *Normal Table of Xenopus* came at an ideal time, and did, without doubt, help to establish *Xenopus* as a popular laboratory organism. Now, nearly 40 years later, it must be regarded as one of the few most favoured laboratory species for experimental embryology.

With the advent of gene cloning, a large amount of embryological work has involved the description of patterns of expression of new genes, the overexpression of genes by mRNA or DNA injection and the underexpression of genes, in *Xenopus*, by dominant-negative receptors or oligo depletion through RNaseH activity. All of these experimental interventions require a detailed knowledge of the morphology of early development.

It is remarkable that the *Normal Table of Xenopus*, published so long ago, should still be the definitive work in this field. It is not always appreciated that several workers contributed to this remarkable *tour de force* and these are clearly acknowledged on p. 6.

The volume under review is an exact reproduction of the original work, page for page, from beginning to end. It contains one page of introduction by John Gerhart and Marc Kirschner. In effect, this is a reprint of the original book and is very welcome because it has been very hard, for a number of years, to obtain copies of this essential volume. My main comment is admiration at the quality of the original work, so much so that it is just as valuable today as it was forty years ago. It is surprising that this volume is presented with a plastic paperclip to hold the pages together. Would it really have cost much more to have the book bound in a normal form?

Many of us who work with *Xenopus* have regretted the absence from the original work of illustrations of histological sections showing the anatomy on which the excellent descriptions are based. Presumably these had to be omitted on the grounds of economy. There would be a very substantial demand for a collection of labelled diagrams of later embryo development. To some extent, this demand has been met by the recent book *The Early Development of Xenopus laevis: an Atlas of the Histology* by Hausen and Riebesell (1991, Springer-Verlag). However, this book, invaluable as it is, does not go beyond the tailbud stage. As more and more workers begin to analyse the details of later morphogenesis through gene activity, the demand for illustrations to accompany the Nieuwkoop and Faber *Normal Table of Xenopus* will increase. In the meantime, all those who work with *Xenopus*, and who may turn to it in the future, will greatly value the availability of this reprint of Nieuwkoop and Faber's *Normal Table of Xenopus*.

J.B. Gurdon

Wellcome Trust and Cancer Research Campaign, Institute of Cancer and Developmental Biology, University of Cambridge, Tennis Court Road, Cambridge, UK CB2 1QR.

'Life is hard and then you die' (John Whiteland)

The Human Genome Project: Deciphering the Blueprint of Heredity

edited by Necia Grant Cooper

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As the above statement of John Whiteland suggests, one should consider life to be a short unpleasant period between birth and death. One might conclude from his pessimistic statement that we are all predestined to live a troublesome life and we are not able to change this. Emile Zola might have agreed with him, but fortunately many others of the species *Homo sapiens* do not. Among those who don't agree are certainly the researchers united in the Human Genome Project. The quality of life can be improved, as has been demonstrated for decades. Although modern medicine, mainly thanks to our knowledge of biological processes, does not necessarily improve the quality of life with every applied treatment to a disease, many diseases can be cured or the progress of a disease can be delayed, including diseases that are very frequent in our population, such as cancer or heart disease. For those who, unlike Whiteland, value their life, this is obviously a desirable development.

The Human Genome Project is an internationally coordinated effort to determine the complete sequence of the nearly three billion base pairs that constitute the human genome, and the 100 000 or so genes that hide in this overwhelming amount of nucleotides that contain the genetic code of human life, as we know it. It is as such a unique project, often compared with another milestone in modern history, the Apollo mission that landed on the moon. Both projects have a lot in common. Once completed they are certainly a 'big step forward for mankind'. Both projects were also heavily criticized by people, often colleagues, who either felt that the project was too ambitious or too costly, and that the large amount of money spent could be used better for other science projects.

The Human Genome Project, however, has already proven within the