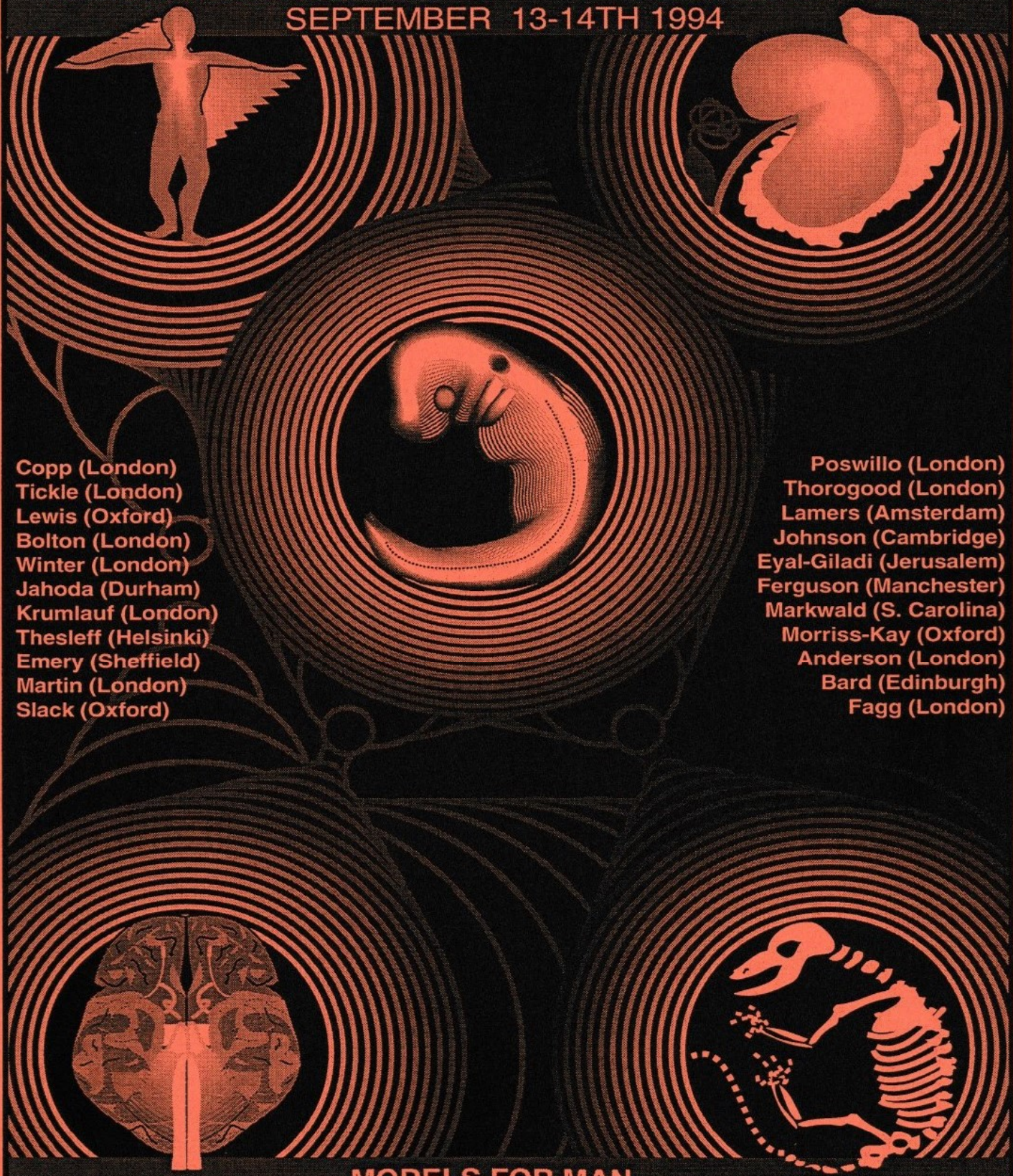
# BRITISH SOCIETY FOR DEVELOPMENTAL BIOLOGY
# SPRING NEWSLETTER
# 1994
# NO: 29

AUTUMN MEETING DURHAM UNIVERSITY

SEPTEMBER 13-14TH 1994



Copp (London)
Tickle (London)
Lewis (Oxford)
Bolton (London)
Winter (London)
Jahoda (Durham)
Krumlauf (London)
Thesleff (Helsinki)
Emery (Sheffield)
Martin (London)
Slack (Oxford)

Poswillo (London)
Thorogood (London)
Lamers (Amsterdam)
Johnson (Cambridge)
Eyal-Giladi (Jerusalem)
Ferguson (Manchester)
Markwald (S. Carolina)
Morriss-Kay (Oxford)
Anderson (London)
Bard (Edinburgh)
Fagg (London)

## MODELS FOR MAN

## The molecular basis of normal and abnormal development

for further information contact: Dr. J. Slack, ICRF Developmental Biology Unit, Department of Zoology,South Parks Road, Oxford, OX1 3PS

# BSDB Newsletter
# No. 29 SPRING 1994

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***New committee members***

***1994 BSDB Poster Competition winner***

***See inside!***

# AUTUMN MEETING 1994

## MODELS FOR MAN: The molecular basis of normal and abnormal development

**University of Durham, September 13th & 14th**

A joint meeting of the BSDB with the Developmental Pathology Society.

Scientific organizers: Jonathan Slack, Cheryll Tickle and Bob Anderson
Local organizer: Colin Jahoda

Have you noticed that textbooks of human embryology remain resolutely descriptive while every issue of Development is bulging with new data about developmental mechanisms, and every grant proposal stresses the importance of developmental biology for human welfare ? This year's Autumn meeting will attempt to tackle this gap by asking just how much more we do know, or should know, about human development, arising from the dramatic advances of the last decade. We shall look at several systems in the body, review their descriptive embryology, find what has been learned from recent mouse or chick experiments, and enquire whether we can any better understand the commoner congenital abnormalities found in Man.The full programme for the meeting follows on pages 2-3..

# "MODELS FOR MAN"

## The molecular basis of normal and abnormal development

### Programme

**Monday 12th September**

Welcome reception
Dinner

**Tuesday 13th September**

PREIMPLANTATION DEVELOPMENT

| | |
|---|---|
| Mouse and Man | M. Johnson (Cambridge) |
| Human preimplantation development | V.Bolton (London) |

*Coffee*

AXIS FORMATION

| | |
|---|---|
| Early inductive interactions | J. Slack (Oxford) |
| Morphogenesis leading to gastrulation | H.Eyal-Giladi (Jerusalem) |
| Hox genes | R.Krumlauf ( Mill Hill) |

*Lunch*

NEURAL TUBE

| | |
|---|---|
| Introduction | G.Morriss-Kay (Oxford) |
| Mechanisms of closure | A.Copp (London) |
| Spinal malformations | J.Emery (Sheffield) |

Tea

INTEGUMENT

| | |
|---|---|
| Skin | C.Jahoda (Durham) |
| Tooth | I.Theslaff (Helsinki) |

**Dinner**

**Poster session**

**Wednesday 14th September**

THE LIMB

| | |
|---|---|
| Introduction | J.Lewis (Oxford) |
| Pattern formation mechanisms | C.Tickle (London) |
| Limb malformations | R.Winter (London) |

*Coffee*

THE FACE

| | |
|---|---|
| Introduction | P.Thorogood (London) |
| Palatal fusion | M.Ferguson (Manchester) |
| Malformations of face | D.Poswillo (London) |

*Lunch*

THE HEART

| | |
|---|---|
| AV cushions | W.Lamers (Amsterdam) |
| Growth factors and epithelial-mesenchymal transition | R.Markwald (South Carolina) |
| AV septal defects | R.Anderson (London) |

*Tea*

THE KIDNEY

| | |
|---|---|
| Introduction | P.Martin (London) |
| Induction mechanism, Wilm's gene. | J.Bard ( Edinburgh) |
| Kidney malformations | N.Fagg (London) |

**Special Conference Dinner**

**END OF MEETING**

**Registration and abstract forms for this meeting can be found in the Centre Section of this Newsletter.**

**The organisers gratefully acknowledge SmithKline Beecham Pharmaceuticals for financial support.**

# OTHER MEETINGS OF INTEREST

## Epithelial Cell Biology
18th-21st September, 1994. Oxford, U.K.

This is the autumn meeting of the British Society for Cell Biology and will take place at St. Catherine's College, Oxford.

Speakers include:

A.Balmain , W. Birchmeier , M. Bissell , R. Burgeson , C. Compton , K. Dano, J.Davies , P.Edwards , M.Ferguson ,E. Fuchs , D. Garrod , B. Gumbiner, C. Jahoda, R. Juliano, B. Lane, J. Lewis, D. Louvard, J. Nelson, H. Ponta, P.Sharpe, E. Stanbridge, M. Takeichi, F. Watt

Further information is available from:
BSCB Epithelial Cell Biology Meeting, Department of Pathology, University of Cambridge, Tennis Court Road, Cambridge, U.K. CB2 1QP . Fax: 0223 333346

# FORTHCOMING BSDB MEETINGS

## SPRING 1995: Cellular Movements, the Basis of Morphogenesis. University of Kent April 20-22nd. Organisers Chris Wylie and Jeff Williams

Plans for this meeting are now well advanced: the preliminary programme is as follows:

*The Basis of Cellular Motility*

J. Spudich (San Diego)
T. Mitchison (Berkeley)
G. Gerisch (Martinsried)
D. St. Johnston (Cambridge)

*Genetic Approaches to Cell Migration*

J. Culotti (Toronto)
M. Stern (Yale)
B. Shilo (Jerusalem)
L. Montell (Baltimore)

*Control of Migration by the Environment (I)*

R. Hynes (Boston)
M. Tessier Levigne (San Francisco)
C. Damsky (San Francisco)
P. Devreotes (Baltimore)
J. Williams (London)

*Control of Migration by the Environment (II)*

C. Wylie (Cambridge)
D. Anderson (Caltech)
M.Leptin (Tübingen)
D. Wagner (Tufts)
S. Rosen (San Francisco)

*Control of Migration by the Environment (III)*

S-I Nishikawa (Tokyo)
W. Risau (Martinsreid)
W. Birchmeier (Essen)

The full programme and Registration Form for this Symposium will appear in the Autumn Edition of the Newsletter.

# MEETING REPORT

## The Evolution of Developmental Mechanisms

University of Edinburgh, April 5th - 8th 1994

Different species vary in their embryonic development, as one would expect given the morphological diversity in the animal and plant kingdoms. This seemingly obvious fact is sometimes overlooked in developmental biology, however, where similarities are currently all the rage. Homologous genes, for example, are widely used as entry points into understanding development. These underscore the common processes utilized in embryonic development, but can rarely explain how differences came about. Attempts to understand evolution require additional approaches, as was reported at the BSDB Spring conference on Evolution and Development, held in Edinburgh in April 1994.

Highlights of the experimental studies reported include work on nematodes, amphioxus, insect and sea urchins. Paul Sternberg reported on Ralf Sommers' comparison of vulval development in different nematode species. This appears to be a promising way to learn what molecular mechanisms underlie a morphological change, because the various species appear amenable to the molecular and genetic tools used on *C. elegans*. One report which did suggest what molecular changes accompanied the innovation of new features was presented by Peter Holland. He proposed, based on work in amphioxus, that gene duplication in the Msx complex may have been involved in the innovation of cranial structures in vertebrates. In the insect world, as reported by Nipam Patel and Diethard Tautz, attention is focused on evolutionary relationships between the short, long and intermediate germ band insects, with homology cloning and comparison of expression patterns being the approach of choice. Among those working on evolution in sea urchins, the question of how the larval stage was lost multiple times during evolution was discussed.

One feature of the meeting, remarked upon by several visitors from the US, was the high level and quality of audience participation. In fact, the level of audience interest in the talks on evolution clearly exceeded the expectations of the organizers. The opening workshop on metazoan phylogeny, for example, was held in a room designed to hold 30 people, not the 200 who showed up! Even the main sessions were held in lecture theatres too small for the numbers that wanted to get in. Posters were also given inadequate attention, with only one evening session being allocated. The posters were placed far away from the lecture halls, and could not be viewed during breaks from talks.

Aside from these glitches, many other aspects of the meeting were enjoyable. Edinburgh itself is an excellent place to hold the meeting, being in a city preferable to isolated campuses, especially as the choice of food is then much wider. In this case however, the conference meals served at Teviot Place were very good and did not drive delegates elsewhere looking for sustenance. The conference dinner, and the following ceilidh, provided nice touches of Scottish culture.

*Suresh Jesuthasan*
*ICRF Developmental Biology Unit,*
*Department of Zoology,*
*Oxford*

# BSDB POSTER PRIZE WINNER
## Edinburgh April 1994

Congratulations to Sheena Eisaks of the School of Biological Sciences, University of Manchester, winner of the Poster Competition at this year's Spring Symposium in Edinburgh. Sheena's prize-winning entry was entitled "Evidence for a Morphogenetic Field in Gastropod Mollusc Eggs". She wins an all expenses trip to the annual meeting of the American Society for Developmental Biology which takes place in Wisconsin this summer.

# TRAVEL GRANTS FOR ATTENDANCE AT BSDB MEETINGS

The Society offers substantial grants to all student members towards the cost of attending its meetings. There is no special form of application; if you would like to be considered for such a grant, just write to the Treasurer, Liz Jones, explaining why you think you qualify and include a letter of support from your supervisor. Please be sure to apply in good time before the meeting as funds are limited and applications are processed on a first come, first served basis.

# TOPICS FOR FUTURE BSDB MEETINGS

The Committee spends a good deal of its time selecting topics for future meetings and making sure these meetings take place. We obviously want to organise meetings that you the members will enjoy and we would welcome suggestions for future meetings topics. If you have an original idea for either a major symposium or a smaller two day meeting, please tell the Meetings Secretary, Rosa Beddington, at the address shown on page 10.

# FAREWELL TO MICHAEL AKAM

The Society bids farewell this Spring to its outgoing Chairman, Michael Akam, who retires from his post after five years in office. We are indebted to Michael for his tireless efforts on behalf of the Society over the past five years; he leaves it in extremely good health with membership increasing and the Spring Symposia and Autumn Meetings ever more popular and successful. The members of the committee also gratefully acknowledge the many other ways in which he has contributed to the British Developmental Biology community during his Chairmanship.

We welcome back to the Committee, Jim Smith who succeeds Michael as Chairman of the Society. Welcome also to Rosemary Ackhurst and Paul Sharpe who were elected to the committee at the last AGM in Edinburgh. They take the places of Jeff Williams and Adam Wilkins to whom we extend our thanks for their service over the past five years.

# CENTRE SECTION

This 'Centre Section' is designed to be removed without damaging the rest of the Newsletter. It contains a form for subscribing to **Development** (below), a membership application and banker's order form, a subscription ammendment form and Registration and Abstract forms for the Autumn Meeting at Durham University.

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## Development

**Members of the BSDB are entitled to a £12 reduction in the subscription price to Development. The cost to non-members is £127 but for members it is only £115. This price includes the casebound Supplement volume which for 1994 will be the proceedings of the "Evolution of Developmental Mechanisms" Symposium.**

.....

To: **Development**
The Company of Biologists Ltd.,
Bidder Building,
140, Cowley Road,
Cambridge,
CB4 4DL
U.K.

Please enter my subscription to **Development** for 1994. I undertake not to pass my subscription copies on to a library. I enclose a cheque for £115 made payable to "The Company of Biologists Ltd".

Signature: .....

Name: .....

Addresss: .....

.....

.....

**Other COB Journals, including BioEssays, the Journal of Cell Science and the Journal of Experimental Biology, are also available at reduced rates. JCS is £85, JEB is £80 and BioEssays is only £55. To subscribe, write to the above address with your cheque and a signed undertaking that you will not pass your individual copy on to a library.**

# APPLICATION FOR BSDB MEMBERSHIP

Full Name: .....Title:.....Degree(s): .....

Professional Address: .....

.....

.....

.....Post Code: .....

Research Interests: .....

.....

I wish to apply for Ordinary (£20)/ student (£7.50) membership of the Society (delete as applicable)
Applications must be endorsed by two Society members who should sign below:

.....(Print Name): .....

.....(Print Name): .....

Please return this form, together with the completed Banker's Order (below) to the Society Secretary:
**Dr. J. Slack, ICRF Developmental Biology Unit, Dept. of Zoology, South Parks Road, Oxford, OX1 3PS**

**For Society's Use**

Acknowledged: ..... Mailing List: .....

---

To: The Manager,

.....Bank

.....

.....

.....Post Code: .....

Please pay to the **British Society for Developmental Biology**
**Account no: 00867675**
**Barclays Bank plc,**
**Oxford Circus Branch (20-64-88)**
**15 Great Portland Street,**
**LONDON W1N 6BX**

the sum of £ ( pounds) on October 1st 1994 and on the same day each year succeeding unless this instruction is altered in writing by me.

Signature: ..... Account No: .....

Name*: ..... Date: .....

Address: .....

.....

.....Post Code: .....

* as shown on cheque book

# Subscription Reminder

As you may know, the membership subscriptions were increased to £20 for full members and £7.50 for graduate students from 1993. Please check your bankers order to ensure that you are paying at the new rate. If you have not yet upgraded it, please fill in the form below and send it to **your own bank**, (not to the Treasurer or Secretary of the Society).
Please note that the graduate student rate of £7.50 is applicable for **3 years only**, after which you must pay the full rate regardless of your status.

---

To: The Manager,

.....Bank

.....

.....

.....Post Code: .....

Please pay to the **British Society for Developmental Biology**
**Account no: 00867675**
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**15 Great Portland Street,**
**LONDON W1N 6BX**

the sum of £ ( pounds) on October 1st 1994 and on the same day each year succeeding unless this instruction is altered in writing by me. **This instruction replaces any previous instruction of payment to the British Society for Developmental Biology, which should be cancelled.**

Signature: ..... Account No: .....

Name*: ..... Date: .....

Address: .....

.....

.....Post Code: .....

* as shown on cheque book

REGISTRATION FORM

**BSDB/DPS Meeting "Models for Man"**
**The molecular basis of normal and abnormal development**
Tuesday and Wednesday 13th and 14th September
Durham University

Name:.....Title:.....Sex: (M/F).....

Address:.....
.....
.....
.....
.....

Tel..... Fax.....

**Registration fees**:

| | | | | |
|---|---|---|---|---|
| | BSDB or DPS members | £30 | non-members | £50 |
| graduate students: | BSDB or DPS members | £15 | non-members | £30 |

The registration fee covers attendance at sessions, conference documentation, tea and coffee.

**Accommodation/meals:**

Accommodation and meals have been arranged as a special package at St Chad's College, Durham University. The charge of £69 will cover bed and breakfast for Monday, Tuesday and Wednesday; dinner on Monday, lunch and dinner on Tuesday and Wednesday. There is an optional special conference dinner on Wednesday evening at an additional price of £16.

| | |
|---|---|
| Accommodation/meals | £69 |
| Special conference dinner | |
| Registration fee | _____ |
| Grand total | _____ |

Make cheques payable to BDSB/Durham meeting.

Please indicate if you have special dietary requirements.....

Please return this form with payment **before 15th August** to the local organiser:

Dr C.Jahoda,
Department of Biological Sciences,
South Road,
Durham DH1 3LE, UK.

If you wish to present a poster you should also send the **title** and an **abstract** with your registration form

**BRITISH SOCIETY FOR DEVELOPMENTAL BIOLOGY**
**DEVELOPMENTAL PATHOLOGY SOCIETY**
**AUTUMN MEETING UNIVERSITY OF DURHAM**
**SEPTEMBER 13TH-14TH 1994**

# ABSTRACT FORM

Absracts from invited speakers and for poster presentations will be included in the Conference Abstract book. Pleases type your abstract in the box below in camera-ready format to be legible when photoreduced so that four abstracts fit on an A4 page. Type using a 12 point typeface. Title in **CAPITAL** letters, names and addresses of authors in **Upper and lower case** .
Leave a blank between addresses and the main text.

Please return completed abstract with your registration form and payment to:
Dr. C. Jahoda, Dept. of Biological Sciences, South Road, Durham DH1 3LE
to arrive not later than AUGUST 15th 1994

# BOOK REVIEWS

**Essential Developmental Biology: A Practical Approach**
**Eds. C.D. Stern and P.W.H. Holland**
**Hard cover ISBN 0-19-9634238**
**333 pages £26.00**

From its initiation in the experimental embryology research of the first half of this century, developmental biology has evolved, via a sometimes tortuous path, to its present site at the forefront of biological research. This has to a large degree been due to the incorporation of the powerful techniques of cellular and molecular biology together with the use of a wide range of model organisms, each having particular technical advantages which facilitate the examination of specific developmental questions. The variety of techniques and organisms which has given developmental biology its strength has also made it very difficult to provide a detailed coverage of all the salient protocols. Yet, in 1991, Claudio Stern and Peter Holland organised a practical course on developmental biology which also resulted in the publishing of this book, another member of the now expansive range of the IRL Practical Approach Series.

In one of his chapters, Ariel Ruiz i Altaba states that the protocols he provides "should enable the novice to perform his or her first experiments and challenge the advanced student." This is much the case for the book itself. Its coverage of developmental biology protocols is, by necessity, far from complete yet it gives a sufficient introduction to allow a beginner to proceed from the handling and often storage of a particular organism, through some initial experiments to the final photographic recording of the experimental data.

The coverage of organisms is broad, as indicated by the first section which gives basic techniques in the collection, handling and initial treatment of embryos from all of the main developmental models, namely, *Drosophila*, *C. elegans*, deuterostomes, zebrafish, *Xenopus*, chicks, rats and mice. The remainder of the text is subdivided into three experimental areas; experimental embryology, cellular techniques, and molecular techniques. Most of the embryological and cellular chapters are designed to give both a theoretical and experimental understanding of important techniques such as cell and tissue transplantation, lineage analysis, cell culture and the production of genetically altered organisms. Unfortunately this forces most of the chapters to be species specific which limits the number of protocols given per organism. In contrast, the molecular techniques section contains protocols which can readily be applied to any developmental system and includes excellent chapters on immunocytochemistry and in situ hybridisation.

The use of various authors, whilst providing high levels of expertise for each experimental procedure, also produces considerable variability in the standard of presentation. Most of the chapters are clearly and simply stated, providing a list of the required materials, giving detailed and precise protocols and, where necessary, including relevant figures. This is especially seen in the chapter on postimplantation mammalian embryos where the protocols are highlighted by the use of simple language and the inclusion of

numerous clear figures. In contrast, others are much less palatable, for example, the cursory chapter on cell ablation and the chapter on culturing of avian neural crest cells which uses more formal text and provides no figures to help the novice sort out the tissues containing neural crest cells from the rest of the chick embryo.

The book does contain two further strong points with respect to its use by a newcomer to developmental biology. Firstly, it contains splendid chapters introducing photomicroscopy of embryonic sections and whole mounts, and time-lapse video microscopy to study cell movements. Each gives a sound and rapid introduction to both the equipment and techniques required for the accurate recording of experimental data. Secondly, the book provides two highly useful appendices. Appendix 1 contains abridged stage tables for the zebrafish, *Xenopus* and chick which will assist in both the following of some of the protocols and in the understanding of experimental data. Appendix 2 provides the addresses of each of the suppliers quoted in the book thus enabling the rapid acquisition of the equipment required for the establishment of a developmental biology laboratory.

In summary, 'Essential Developmental Biology' does not constitute a bible for developmental biologists but it does provide a very useful reference for either a newcomer to developmental biology research or an experienced developmental biologist who would like to look at the use of a different developmental or experimental system.

*Michael Fietz,*
*ICRF Developmental Biology Unit,*
*Dept. of Zoology,*
*Oxford.*

**Neural tube defects : Ciba Foundation Symposium 181. 1993.**
**Ed. G. Bock and J. Marsh.**
**John Wiley & Sons 1994. 299 pages.**
**Hardback ISBN 0 471 94172 7 £47.50**

Don't be misled by the title of this volume. While half of the contributions do directly deal with neural tube defects, the other half are about the normal morphogenesis of the neural tube. The papers and corresponding discussions in this volume are from a symposium where developmental biologists were brought together with epidemiologists and medical geneticists so that they shared their views on neural tube defects.

From the lab, we are given state-of-the-art accounts of the normal morphogenesis of the neural tube in amphibians, chicken, mice and man. Different levels of analysis are being followed. Although descriptions of the cell movements involved can probably be found in reviews by the same authors, they are here all together in a well illustrated presentation which stimulates comparison between organisms. Because neural tube defects correspond to a failure of the neural tube to close properly, it is indeed essential to know these normal cell movements. Ultimately, we must understand these processes at the molecular level. Candidate genes are being cloned by homology to morphoregulatory genes from *Drosophila* or to known cell adhesion or cytokine genes. Their activity is assessed here by overexpression of normal or dominant negative forms of the mRNA in *Xenopus* embryos or by comparing

their expression pattern between wild-type and mutant strains of mice. Strains of mutant mice showing neural tube defects might also lead to the identification of genes involved by positional cloning and meanwhile they are shown to provide useful models for understanding the variety of neural tube defects in humans.
From the clinic, we learn, however, that neural tube defects are not simple monogenetic pathologies as in the mouse models. Their aetiology is complex and various genetic and environmental factors may play a role. For instance, alcohol, antiepilepsy treatments and insulin-dependent diabetes increase the risk of neural tube defects. Quite impressively, clinical trials have shown that the folic acid vitamin, when consumed before and after conception, can prevent neural tube defects. The implementation of a programme ensuring women of child-bearing age consume enough folic acid is, therefore, abundantly discussed (should flour be systematically supplemented with folic acid ?). It is not clear how folic acid acts and unfortunately, it does not have a preventive effect in the mutant mouse models examined so far. Different ways of tackling this problem are described; targeted mutagenesis of enzymes of folic acid metabolism by homologous recombination may help.
The papers and discussions are concise and critical in the description of what is know so far, making this a stimulating read. Although the volume is very well edited and has a useful index, a medical dictionary/textbook of human embryology would be helpful for finding definitions of the various neural tube defects in humans. The discussions following each paper most often involve people from the same background as the speaker, which probably reflects a need for more regular communication between the lab and the clinic. We will hear more of what developmental biologists and clinicians can learn from one another at the next BSDB meeting, Models for Man !

*Jean-Paul Concordet,*
*ICRF Developmental Biology Unit,*
*Department of Zoology,*
*Oxford*

## DISCOUNT *DEVELOPMENT* SUPPLEMENTS

The Company of Biologists are offering substantial discounts on recent editions of the Development Supplements exclusively to BSDB members. For instance, the latest 1993 volume, "Signals, Polarity and Adhesion in Development" is normally priced at **£59** but is now available to members only at the special rate of **£39**. Similarly, the 1992 "Gastrulation" volume is reduced from **£54** to **£29** while "Nerve Cell Development" is being reduced from **£34** to **£20**. To avail yourself of this offer, send your order directly to:

The Company of Biologists,
Bidder Building,
140 Cowley Road,
Cambridge CB4 4DL.

You must include proof of Society membership along with payment (including **£4** for postage and packing).

# BSDB Committee members and other useful addresses

The main function of the BSDB Committee is to organize our meetings, from deciding on appropriate topics to arranging organizers and venues. The Officers of the Society have specific functions. Jim Smith (Chairman) keeps us all in order; Jonathan Slack (Secretary)deals with the membership list; Liz Jones (treasurer, soon to be succeeded by Jonathan Bard)handles subscriptions and awards travel grants; Rosa Beddington (Meetings Secretary) does most of the work in arranging meetings and deciding on venues; Philip Ingham (Publications Secretary) assembles this Newsletter and helps edit the Symposium volume. These Officers will be happy to answer any questions relating to their subjects.

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## DEVELOPMENT

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# PLEASE HELP US TO KEEP TRACK OF YOU!

This Newsletter is our only way of keeping in touch with the membership of the Society so it is really important that we have your correct **CURRENT** address. The cost of printing and mailing the Newsletter twice a year represents a significant proportion of the membership fee: so if we don't have your correct address, not only are you missing out on the Society's news, you are also wasting your money (as well as our time and effort)!!

If you have moved (but this copy of the Newsletter has been re-directed to you) or you are about to move, PLEASE fill in the **Change of Address** slip below and return it to the Secretary of the Society, Jonathan Slack, at the address shown. Thank You!

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**NOTIFICATION OF CHANGE OF ADDRESS**

**NAME:**.....

**Please note that with effect from:...../...../.199....**
**my address will be:**

**Institution:**.....

.....

.....

**Town/City**.....**Post Code:**.....

**Signature**.....

**Return the completed form to:**

Dr. J. M. W. Slack,
ICRF Developmental Biology Unit,
Department of Zoology,
South Parks Road,
Oxford, OX1 3PS