BRITISH SOCIETY FOR DEVELOPMENTAL BIOLOGY

AUTUMN NEWSLETTER

1993

No. 28

EDINBURGH • 5-8th APRIL 1994

bsdb

EVOLUTION OF DEVELOPMENT

chothia • engel • ingham • scott
hogan • sternberg • bate • bowtell
coen • dellaporta • conway-morris
adoutte • wolpert • ruddle • wray
holland • coates • tabin • alberch
müller • de robertis • tautz
patel • akam • nijhout

DEVELOPMENT OF THE CEREBRAL CORTEX

la mantia • mc connell • price
lotto • molnar • price • fregnac
thompson

EMBRYOLOGICAL DATABASES

bscb

CELL BIOLOGY OF CANCER

hastie • hooper • gruss
bryant • ponder • feinberg
glover • yanagida • morena
reed • dyson • peters • lane
pawson • massague • nishida
roussel • ridley • critchley
karsenti • hall • parsons

EXTRACELLULAR MATRIX

burgeson • ekblom • humphries
lander • mc mahan • murphy
hynes • streuli • watt

British Society for Developmental Biology / British Society for Cell Biology 1994 Joint symposium.

For further information, contact: "Joint Spring Meeting", MRC Human Genetics, Western General Hospital, Crewe Road, Edinburgh EH4 2XU Fax: 031 343 2620

BSDB Newsletter
No. 28 AUTUMN 1993

In this issue

Congratulations!

to Jim Smith, erstwhile BSDB committee member, who has been awarded the 1993 EMBO Medal for his anysis of mesoderm induction in vertebrate development. A review of Jim's prize-winning work appears in the EMBO Journal 12: 4463-4470

Spring Symposium 1993

"The Evolution of Developmental Mechanisms"

Venue: University of Edinburgh

The Spring 1994 Symposium entitled **"The Evolution of developmental mechanisms"** will take place at the University of Edinburgh from **Tuesday 5th April to Friday 8th April.** As usual, the Symposium will run concurrently with that of the British Society for Cell Biology.

The last time the Society held a Symposium on the the Evolution of Developmental Mechanisms was in 1981. Since that time, the application of molecular biological techniques - in particular, the Polymerase Chain Reaction - has had an enormous impact on this area of research, an impact which is fully reflected in the exciting programme.

The main **BSCB symposium** is entitled **"The Cell Biology of Cancer"**. In addition to the two main Symposia there will be a joint Poster Session and parallel workshops on **"Development of the Cerebral Cortex"** (BSDB), **"Extracellular Matrix"** (BSCB) and **"Embryological Data Bases"** (BSCB/BSDB)

A **Booking Form** and **Abstract Form**, can be found in the 'Centre Section' of the Newsletter. The full scientific programme appears on the following pages.

"The Evolution of Developmental Mechanisms"

Scientific Organisers: Michael Akam, Peter Holland and Greg Wray.

Tuesday April 5th

Evening (8-10pm) Metazoan phylogeny workshop

Simon Conway-Morris	Cambridge	The metazoan radiation: Paleontological evidence
Andre Adoutte	Paris	The metazoan radiation: Molecular evidence

Wednesday April 6th

9-10am **BSCB Plenary Lecture**

Richard Hynes	Cambridge (Mass)	Fibronectin

Morning session: 10.30- 13.00 **Conservation and divergence at the molecular level**

Cyrus Chothia	Cambridge	Protein families in the metazoan genome
Jurgen Engel	Basel	Domain organizations of extracellular matrix proteins and their evolution
Philip Ingham	London	The *hedgehog* gene family in vertebrate and invertebrate development
Matthew Scott	Stanford	Downstream of the homeobox genes: The control of morphogenesis

Afternoon session 14.00-17.30 **Evolution and development at the cellular level**

Brigid Hogan	Vanderbilt	Growth factor families in development
Paul Sternberg	Caltech	The evolution of cell lineage in nematodes
Michael Bate	Cambridge	Muscle patterning and specification in vertebrates and invertebrates

David Bowtell	Melbourne	Making eyes
Enrico Coen	Norwich	Controlling the diversity of flower development

Thursday April 7th

9 - 10 a.m. **BSDB Plenary Lecture**

Denis Duboule	Geneva	Hox genes, temporal colinearity and the vertebrate body plan

Morning session 10.10-13.00 **Development and evolutionary radiation of invertebrates**

Lewis Wolpert	London	The origins of developmental mechanisms
Frank Ruddle	Yale	Evolution of Hox gene clusters
Greg Wray	Stonybrook	Echinoderm development
Peter Holland	Oxford	The origins of vertebrate development

Afternoon session 14.00-17.30 **Development and evolution of vertebrates**

Michael Coates	Cambridge	The origin of the vertebrate limb
Cliff Tabin	Harvard	Why we have five fingers
Pere Alberch	Madrid	Evolutionary changes in limb patterning
Gerd Müller	Vienna	The developmental origin of evolutionary novelties
Eddy de Robertis	Los Angeles	Comparative analysis of early vertebrate development

Evening session

Poster Session and Conference Dinner

Friday April 8th

9 - 10 a.m. **BSCB Plenary Lecture**

Tony Pawson	Toronto	Title to be announced

Morning session **Arthropods and Segmentation**
10.10-13.00

Diethard Tautz	Munich	Development of long and short germ insects
Nipam Patel	Baltimore	Arthropod segmentation
Michael Akam	Cambridge	Hom/Hox genes and arthropod development
Frederik Nijhout	Duke	Development and evolution of butterfly wing patterns

BRITISH SOCIETY FOR CELL BIOLOGY SYMPOSIUM
"The Biology of Cancer"

Wednesday April 6th

N. Hastie	Edinburgh	Wilms tumour- a paradigm for the cancer development relationship
M. Hooper	Edinburgh	Role of the p53 and Rb genes in cancer, development and apoptosis
P. Gruss	Göttingen	Pax genes in development and cancer
P. Bryant	Irvine	Tumour suppressor genes in *Drosophila*
B. Ponder	Cambridge	Multiple endocrine neoplasia type 2A is caused by mutation in the Ret protooncogene
A. Feinberg	Ann Arbor	Imprinting of human genes and relaxation of imprinting in embryonic tumours

Thursday April 7th

M. Yanagida	Kyoto	Control of mitosis
S. Morena	Salamanca	ruml and S-phase control in S. pombe

S. Reed	La Jolla	control of the G1/S phase transition in yeast and animal cells
E. Karsenti	Heidelberg	Microtubule dynamics and the cell cycle
N. Dyson	Charlestown	The partners and homologues of the retinoblastoma protein
G. Peters	London	D-type cyclins and their role in tumorigenesis
D. Lane	Dundee	DNA damage and the p53 supressor gene

Friday April 9th

J. Parsons	Virginia	SH2/SH3 Domains, FAK and non-receptor kinases
M. Roussel	Memphis	CSF-1 receptor, cell cycle and myc expression
A. Ridley	London	Rho, Rac, the actin cytoskeleton and scatter factor
J. Massague	New York	The TGF-β Family

BSDB Workshops

Tuesday 5th April: Metazoan phylogeny

S. Conway-Morris	Cambridge	The metazoan radiation: Paleontological evidence
A. Adouette	Paris	The metazoan radiation: Molecular evidence

Thursday 7th April: Development of the Cerebral Cortex

A-S. LaMantia	Duke	PAX genes, retinoid induction and differential cell adhesion in forebrain rudiment formation
S. McConnell	Stanford	Cell commitment, cell cycle and cell migration during cortical development
J. Price	London	Cell lineage in cortical development
B. Lotto	Edinburgh	Trophic, tropic and growth promoting interaction in the development of cortical innervation
Z. Molnar	Oxford	Multiple mechanisms in the establishment of thalamo cortical innervation

D. Price	Edinburgh	Mechanisms of development of cortical association connections
G. Goodhill	Edinburgh	Theoretical modelling of the development of cortical afferents
Y. Fregnac		The role of temporal correlation between pre and postsynaptic activity in the developmnet of visual receptive fields

Friday 8th April: Embryological Databases

D. Davidson & R. Baldock	Edinburgh	Mouse anatomy and gene expression
R. Durbin	Cambridge	Nematode genome and development
V. Hartenstein	Los Angeles	*Drosophila* embryonic organisation
E. Linney	Duke	3D NMR images of mouse embryos
J. Nadeau	Bar Harbor	Mouse gene expression
J. Wassom	Oak Ridge	Transgenic mice

BSCB Workshop

Wednesday 6th April: Extracellular Matrix

P. Ekblom	Uppsala	Basement membrane components as regulators of epithelial cell differentiation
M. Humphries	Manchester	The interactions of integrins with molecules of the extracellular matrix
A. Lander	Cambridge, Mass.	Molecules and mechanisms in neuron-extracellular matrix interactions
J. McMahan	Palo Alto	The agrin protein family: Structure, function and evolution
G. Murphy	Cambridge	The role of proteinases in extracellular matrix remodelling
G. Streuli	Manchester	The regulation of gene expression in mammary cells by laminin
F. Watt	London	Cell-extracellular matrix interactions modulating keratinocyte differentiation

FUTURE BSDB MEETINGS

AUTUMN 1994: Models for Man. Durham University September 13-14th

A joint meeting of the BSDB and the Developmental Pathology Society organised by Jonathan Slack, Cheryll Tickle and Bob Anderson

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? The Autumn meeting of next year 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 understand any better the commoner congenital abnormalities found in man.
Sessions will cover: preimplantation development, axis formation, the neural tube, the integument, the limbs, the face, the heart and the kidney.

The current list of speakers is: R. Anderson, J. Bard, V. Bolton, A. Copp, J. Emery, H. Eyal-Giladi, N. Fagg, M. Ferguson, C. Jahoda, M. Johnson, R. Krumlauf, W. Lamers, J. Lewis, R. Markwald, P. Martin, G. Morris-Kay, D. Poswillo, J. Slack, I. Theslaff, C. Tickle, P. Thorogood, R. Winter

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 and the preliminary programme is as follows:

(1) **The Basis of Cellular Motility**

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

(2) **Genetic Approaches to Cell Migration**

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

(3) **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)

(4) **Control of Migration by the Environment (II)**

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

(5) **Control of Migration by the Environment (III)**

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

Further details will appear in the Spring Edition of the Newsletter

TOPICS FOR FUTURE SOCIETY MEETINGS

One of the major tasks of the BSDB Committee is to select topics for future meetings and ensure that these meetings take place. It is obviously important that we organise meetings that will be supported by the members of the Society and we therefore always welcome suggestions for future topics. If yopu have an original idea for either a major Spring Symposium or a smaller two day Autumn meeting, please get in touch with the meetings secretary, Rosa Beddington at the address shown on page 14

TRAVEL GRANTS FOR ATTENDANCE AT BSDB MEETINGS

The Society offers substantial grants towards the cost of attending its meetings to all student members. There is no special application form; simply write to the Treasurer, Liz Jones, explaining why you think you qualify for such a grant and include a letter of support from your supervisor.

DISCOUNT JOURNAL SUBSCRIPTIONS

Members of the BSDB are entitled to discounted subscription rates to four leading developmental biology publications.

Academic Press continues to offer a very significant discount on subscriptions to **"Developmental Biology"** for BSDB Members. For 1994, the normal personal overseas subscription rate is $307.00, but Society members can subscribe at the reduced rate of **$175.00**.This price includes postage.
All orders and payments should be addressed to:

Kerrie Opprecht,
Journal Circulation Department,
Academic Press, Inc.,
525 B Street, Suite 1900,
San Diego,
CA 92101-4495, U.S.A.

The Company of Biologists offers a special Personal subscription rate to **"Development"**, which at **£115.00** a year represents a saving of nearly 10%. An application form for Development can be found in the Centre Section of the Newsletter.
In addition, members can subscribe to "**Bioessays**" at the reduced rate of £55, a saving of £10 on the normal personal subscription. Details of this offer appear on the inside back cover.
Finally, Elsevier offer subscription to **"Trends in Genetics"** at the special rate of £54. A 1994 subscription form is enclosed with this edition of the Newsletter. Please note that this form should be sent to:
Elsevier Science Publishers Ltd.,
Oxford Fulfilment Centre,
PO Box 800,
Kidlington,
Oxford, OX5 1DX
and NOT to the address shown on the form!

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, together with Registration and Abstract forms for the Autumn meeting at Queens' College, Cambridge.

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: Dr/Ms/Mr .....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: ..... Elected: .....

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 1993 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

June 24th, 1993

Dear Member,

You may have noticed in the recent BSDB Newsletter, that the membership fees for the British Society of Developmental Biology have been increased. This increase followed from the Annual General Meeting of the Society in April where the financial state of the Society was discussed. In order to preserve the financial health of the Society, it was decided to raise the fees from **£10 to £20** for non-student members and from **£5 to £7.50** for student members. This increase should allow the Society to maintain the high quality of its scientific meetings, and continue to provide substantial travel grants to graduate students and postdoctoral fellows.

In order to facilitate this increase, the Society requests that all members update their subscriptions before the beginning of October on the form provided below. This form should be sent **directly to your own bank**. If you have already returned forms from the newsletter to the treasurer it is not necessary to fill in the form on this letter, **but please ensure that your previous bankers order to the Society is cancelled**. Thank you for your cooperation in this matter.

Yours sincerely

Dr E.A.Jones
BSDB Treasurer

To: The Manager
.....Bank
.....
.....
.....Post code.....

Please pay to the **British Society of 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 1993 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 of Developmental Biology, which should be cancelled.**

.Signature.....Account no.....Date.....
Address.....
.....Post code.....

BSDB/BSCB Spring Meeting: University of Edinburgh

5th - 8th April 1994

REGISTRATION FORM

Name_____Dr/Mr/Ms

Address_____

_____

_____

_____

Phone _____ Fax _____

Accommodation will be in Pollock Halls, the university residences, breakfast and dinner will be in the Pollock Hall refectory, and lunches at several student unions in the city. The Scottish Banquet and Ceilidh will be at Pollock Halls. The Ceilidh is free and open to all, the Banquet is limited to the first 300 at a cost of £22.

Registration includes programme and abstracts, a shuttle bus service to the central site, tea, coffee and the Ceilidh on Thursday night.

Students have a reduced registration, **provided evidence of status is supplied** with this form.

	Tues 5th	Wed 6th	Thurs 7th	Fri 8th	totals
Dinner £6.15					
			OR Scottish Banquet £22		
Bed and Breakfast £19.95					
Lunch £5.50					
				Registration	
				TOTAL	

Note: on Thursday choose dinner (£6.15) OR the Scottish Banquet (£22)

Registration:	society member	£45	non members	£70
	student members	£15	student non members	£30

Cheques should be payable to "BSDB/BSCB Spring Meeting"

Foreign bank drafts IN STERLING to "University of Edinburgh: BSDB/BSCB Spring Meeting Account"

Credit cards are accepted: VISA ☐ MASTERCARD ☐

Number_____ Expiry date_____

Signature_____

Return this form, and abstract form if applicable, to:

BSDB/BSCB Spring Meeting, MRC Human Genetics Unit, Western General Hospital, Crewe Road, Edinburgh, EH4 2XU. BY 21st FEBRUARY fax 031 343 2620

BSDB/BSCB Spring Meeting: University of Edinburgh

5th - 8th April 1994

ABSTRACT FORM

Abstracts from invited speakers and from poster presentations will be included in the Abstract Book. Type the abstract to fit in the box below (12.5cm x 18cm) using 12 point typeface (Times-Roman if possible) title in **CAPITALS**, authors and addresses in **Upper and lower case**. Indicate authors attending the meeting with an asterix*. Leave a line blank between address and text. **Please, if possible include a disk of the text, PC or Mac, any WP format; but also include an ASCII file.**
Poster boards will be 1m square; with extension below for 1m to ground level possible. Posters are affixed by pins.

Please circle the relevant details below:

1)
Invited speaker
or
Poster presentation

2) Subject area of presentation:

Evolution of developmental processes

Cell biology of cancer

Extracellular matrix

Development of cerebral cortex

Databases in development

3) Eligibility for poster prize?

BSDB Student poster

BSCB Student poster

Return the completed abstract form, registration form, and computer disk with payment to:
BSDB/BSCB Spring Meeting, MRC Human Genetics Unit, Western General Hospital, Crewe Road, Edinburgh EH4 2XU **BY 21st FEBRUARY**

Where are you now ?

Are you getting the best experience from your long journey through the great laboratory of life ?

You certainly aren't if you haven't told us where you're at !

if

you are a member of the British Society for Developmental Biology

and

you haven't had a Newsletter this year

or

your Newsletters were forwarded from a previous address

then we don't have your present address on our database. So please fill in this form and return it to the secretary:

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

Please amend my address on the BSDB database:

name.....

address.....
.....
.....
.....
.....

Nominations for Committee

The **AGM** of the Society will be held during the Edinburgh Symposium. One item will be the election of new committee members to replace those retiring in 1994.

If you wish to nominate someone for the committee, please fill in this form, including the candidate's consent, and return to the secretary, **not later than 6 weeks before the date of the AGM.**

Name:.....

Proposer:.....

Seconder:.....

I agree to serve if elected:.....
(signature of candidate)

Candidates, proposes and seconders must all be members of the Society.

Return to: Dr. J. Slack, ICRF DBU, Dept. of Zoology, South Parks Road, Oxford, OX1 3PS.

BSDB FINANCIAL STATEMENT AUGUST 1991 - AUGUST 1992

1992	INVESTMENTS	1993
£ 11,239.98	National Savings	£ 12,189.84
£ 584.38	Treasury Stock	£ 584.38
	ACCOUNTS	
£ 5,238.18	Current	£ 7,440.44
£ 0.55	Deposit	£ 2.99
£ 37,366.33	High Interest deposit	£ 42,076.58
£ 54,429.42	Total Assets	£ 62,294.23

Represented by:

Income	**£ 34,188.40**
Expenditure	**£ 26,323.59**
Credit for Year	**£ 7,864.81**
Balance from 1992	**£ 54,429.42**
Balance 1993	**£ 62,294.23**

INCOME 1992-93

Brighton Symposium, Spring 1992 returns	2,424.00
Kingston Symposium, Autumn 1992	623.00
Capitation Fee and first Brighton Symposium Grant, COB	13,498.00
Membership fees paid by cheque	30.00
Royalties	1,297.78
Advertising	150.00
Total through book	18,022.78
Membership bankers orders	5,834.33
High Interest Account Deposit	6,526.00
Treasury Stock dividend	68.74
Deposit Account Interest	2.44
High Interest Deposit Account Interest	2,784.25
Post Office Savings Account Interest	949.86
Total Income	**34,188.4**

EXPENDITURE 1992-1993

Travel Grants	8,809.40
Newsletter	2,170.61
Leeds Symposium Expenses	5,459.36
Lancaster Symposium	2,667.65
Sussex Symposium	855.00
Kingston Symposium	1,374.00
Committee expenses	1,023.67
Other	813.50
Total through book	26,786.41
Bank commission	623.91
Foreign Transfer	581.27
	27,991.59
Minus uncashed cheques	1,668.50
Total expenditure	**26,323.59**

MEETING REPORT

Retinoic Acid in Development: Cambridge September 27-28th

BSDB meeting or Institute Retreat? This was the dilemma that faced us. We chose the BSDB meeting,"Retinoic Acid in Development", and were not disappointed. The prospect of 26 speakers in two days seemed daunting, but organisation was such that the most uninformed of us were not swamped. A wide range of systems were presented ranging from EC cell culture to *Dictyostelium.*

The first speaker (Ulf Eriksson) gave a clear account of the molecular aspects of retinol metabolism and RA compartmentalisation, providing an excellent foundation for the following talks to build on.

The nuclear receptors for RA, introduced by Magnus Pfahl, were discussed at length by numerous speakers. It was interesting to see the number of RAR and RXR genes that are known to be expressed in vertebrates, and to note that many of these genes are alternatively promoted/spliced to produce several protein isoforms. However, the complexity of this system could only be appreciated when it was realised that these receptors interact as heterodimers which bind with slightly different stereospecificities to different RA Response Elements (RAREs). The first day ended with a seminal presentation of RAR gene knock-outs by Pierre Chambon. This work provides another example of gene redundancy in the mouse: ablation of individual isoforms have no developmental effect, but when the entire isoform complement of either RARa or RARg is removed mutant phenotypes ensue. Most impressively,Chambon showed how combinations of these knock-out mutations result in phenotypes associated with retinoid starved mothers. It was a shame he had just 30min. in which to summarise a huge amount of work!

On the second day, the emphasis shifted to RA responsive genes. A host of elegant *in situ* data were presented, examining the effect of RA on the expression patterns of Hoxb genes (Ron Conlon) while the responsive elements (RAREs) for this cluster were described by Heather Marshall. The effects of RA or the presence of retinoid responsive elements were covered for the HoxA, B and D gene families.

The final session of the meeting discussed the formation and regeneration of limbs. Cheryll Tickle illustrated that two molecules, RA and FGF4, could together substitute for the inductive signals provided by the apical ectodermal ridge during limb genesis. However, to us, the most striking observation was discussed by Malcolm Maden - the generation of pelvic girdles and several pairs of hind limbs on treatment of an amputated tadpole tail with RA. This is only known to occur in two species, an exotic Indian frog and the common English frog. These limbs can be examined easily as, following tail regression, the limbs drop off to be found in the bottom of the tank!

To conclude, this was another successful BSDB Autumn Symposium with good scientific content. Presentations were suitable for those with the most minimal knowledge of RA, with little material duplicated. Also, it is refreshing to attend a meeting which links multiple themes to better our understanding of the interactive processes involved in development. Much of the credit for this goes to Malcolm Maden, although he could have ordered some better weather!?

Susan Brown & Mark Carlton
Wellcome/CRC Institute
Cambridge

BOOK REVIEWS

Regulation of the Eukaryotic Cell Cycle: Ciba Foundation Symposium 170. 1992.
Ed. J.Marsh.
John Wiley & Sons 1992. 300 pages
Hardback (ISBN 0 471 934461) £42.50

Knowledge of how the cell cycle is regulated has advanced considerably in the past few years, and it is from within the realm of developmental biology that certain of the seminal findings have emerged. One was the discovery of cyclins in early invertebrate embryos, and another that maturation promoting factor is a complex of a cyclin and its dependent kinase. In conjunction with genetic analysis undertaken principally in yeast, these studies have served both to identify a number of the key molecules and to demonstrate their remarkable evolutionary conservation.

For developmental biologists wishing to become better informed about the cell cycle without ploughing through the forbidding research literature, this volume is of value in offering a more balanced perspective than the typically idiosyncratic review. It follows the very familiar pattern for Ciba Symposia, with relatively concise papers each followed by specific discussion and punctuated by sessions of general discussion. As usual, the papers range from the broad and somewhat speculative to those that are more narrowly focused on the presentation of specific data. It is not, however, an easy read for those who are not conversant with the field, largely because the terminology for the genes and their products is even more of a nightmare than that for the vertebrate Hox complex before it was reformed. For example, for those seeking enlightenment about p13suc1 in this volume the search will be in vain. Nevertheless, Hunter provides a very lucid and balanced introduction that greatly assists in placing in context the various themes that are developed and discussed thereafter.

The principal emphasis is on analysing control of cell cycle progression in both budding and fission yeast and in mammalian cells in culture. This is approached mainly from the perspective of cyclins, their dependent kinases (cdks), and the various kinases and phosphatases which regulate the activity of the complexes that cyclins and cdks form. It also includes consideration of interaction of cyclin-cdk complexes with other regulatory proteins, most notably the products of retinoblastoma and src genes, and well as discussion of the role of mos in meiotic maturation of the oocyte.

An inevitable problem with publishing a symposium in a fast moving field is the speed with which it becomes dated. Since this volume appeared both the cyclin and cdk families have enlarged, additional proteins have been implicated in cell cycle regulation, and disruption of the genes for both p53 and p105Rb has been accomplished in mice. Nevertheless, for those who seek perspective rather than detail from a symposium this one has not yet lost its currency.

Richard Gardner,
ICRF Developmental Biology Unit,
Department of Zoology,
Oxford

Animal Cell culture

S.J. Morgan and D.C. Darling,
Bios Scientific Publishers Limited in Association with the Biochemical Society 1993. 162 pages
Paperback (ISBN 1 872748 16 1) £15

This book is intended as an introductory text for those who are encountering cell culture for the first time, and is meant to be equally applicable to scientists at all levels. This first section of the book deals with basic techniques encountered in tissue culture from the use and care of equipment through media preparation primary and continuous cell culture techniques dealing with contamination and cloning. As a scientist who has spent a large proportion of time at a laminar flow hood, I found this section both useful and informative. Much of the information that was passed to me by word of mouth as a starting graduate student I found written down in a coherent yet simple style which would certainly be accessible to the majority of cell culture workers. The photographic section in Chapter 3 was particularly good as a means of establishing good aseptic handling practice and there seemed to be enough practical details to perform the particular methods described.

The second section of the book describes specialist systems of tissue culture. I found this a little less satisfactory, since there was not quite enough detail in the book for an individual wanting to actually carry out these techniques. As an introduction to these techniques, however, which was the remit of the book, it was adequate and the end of each chapter there were references to extend the readers knowledge.

On the whole I thought this book was a very useful addition to the laboratory library as a starting reference book to the tissue culture novice, it is perhaps a little overpriced for its contents, presumably the influence of the publisher!

Liz Jones
Department of Biological Sciences
University of Warwick
Coventry

Genetic analysis of animal development: second edition

Adam S. Wilkins
John Wiley & Sons 1992. 566 pages
Clothback (ISBN 0 471 50271 5) £83.00
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We are at the mercy of our mutations in genetic analysis. To study the genetic basis of development we must use every opportunity to tailor our selection strategies to uncover informative mutations. In Genetic Analysis of Animal Development, Adam Wilkins has provided a valuable resource for this task which will be useful both to the experienced and the novice researcher. The book is organised into six core chapters including early and late development of each of the three classic genetic animals; the nematode (Caenorhabditis elegans), the fruitfly and the mouse. Each chapter includes a detailed review of the developmental, molecular and genetic facts which are available for the animal and stage of development. Both descriptive and experimental embryology are covered in sufficient detail to humble the geneticist before the complexity of the task. This is especially true in the early chapters which are limited to maternally-determined processes including oogenesis and embryogenesis before gastrulation. Soul-searching is appropriate. We should wonder why our understanding of

the genetic basis of morphogenetic processes (e.g. nematode vulval development or fly segmentation) far exceeds that of oogenesis, which must be the central question of developmental biology. Are we asking the right questions? What circumstances favour genetic analysis of zygotic processes? Can the problems in oogenesis be surmounted by improved genetic approaches such as clonal analysis? It might be argued that mutational analysis can only be applied to the incremental function where a single pathway based on a small number of genes makes a discrete addition to a developmental pattern. Can such processes be identified in oogenesis where a single cell is being groomed to produce the entire organism? In the chapter on fruitfly oogenesis, the answer is yes. This success results from the direct linkage of the products of maternal genes with regulation of zygotic processes. In fact the maternal products involved in the best known systems (a-p and d-v axis formation) do not begin to function until the late stages of embryonic cleavage. It may be necessary to approach the genetic analysis of oogenesis as a problem of cell biology without direct reference to further development.

This book will also be useful to the lecturer. It provides the background which will allow the specialist working in genetics on one of these organisms or in other systems to give students a broad picture of the difficulties and potential in the genetic analysis of development. The predictable structure of each chapter makes it easy to find useful information on such subjects as embryology and genome organisation.

Selected chapters might be used by advanced undergraduates to provide depth of coverage, however I think that the average third year undergraduate could not use the book as a core text. In part this results from the organisation which has been followed. The first two chapters provide interesting historical and philosophical background but the third chapter leaps into nematode oogenesis, a subject where genetics has, as yet had little success. By the end, the student is left feeling considerable sympathy for embryologists described in the first chapter who maintained the schism between their subject and genetics. The obvious successes of developmental genetics and the clear 'stories' are not presented until the second half of the book. Even here the presentation may often be too detailed for undergraduate consumption. This book would be particularly valuable in a postgraduate student seminar series. Unhappily such luxury is not easily afforded in the British system of the three year PhD.

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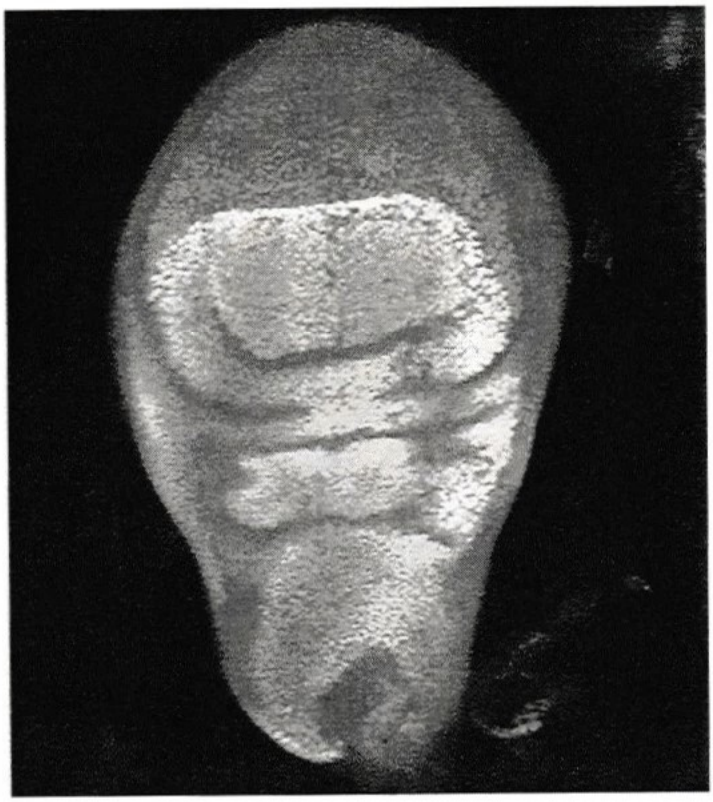

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