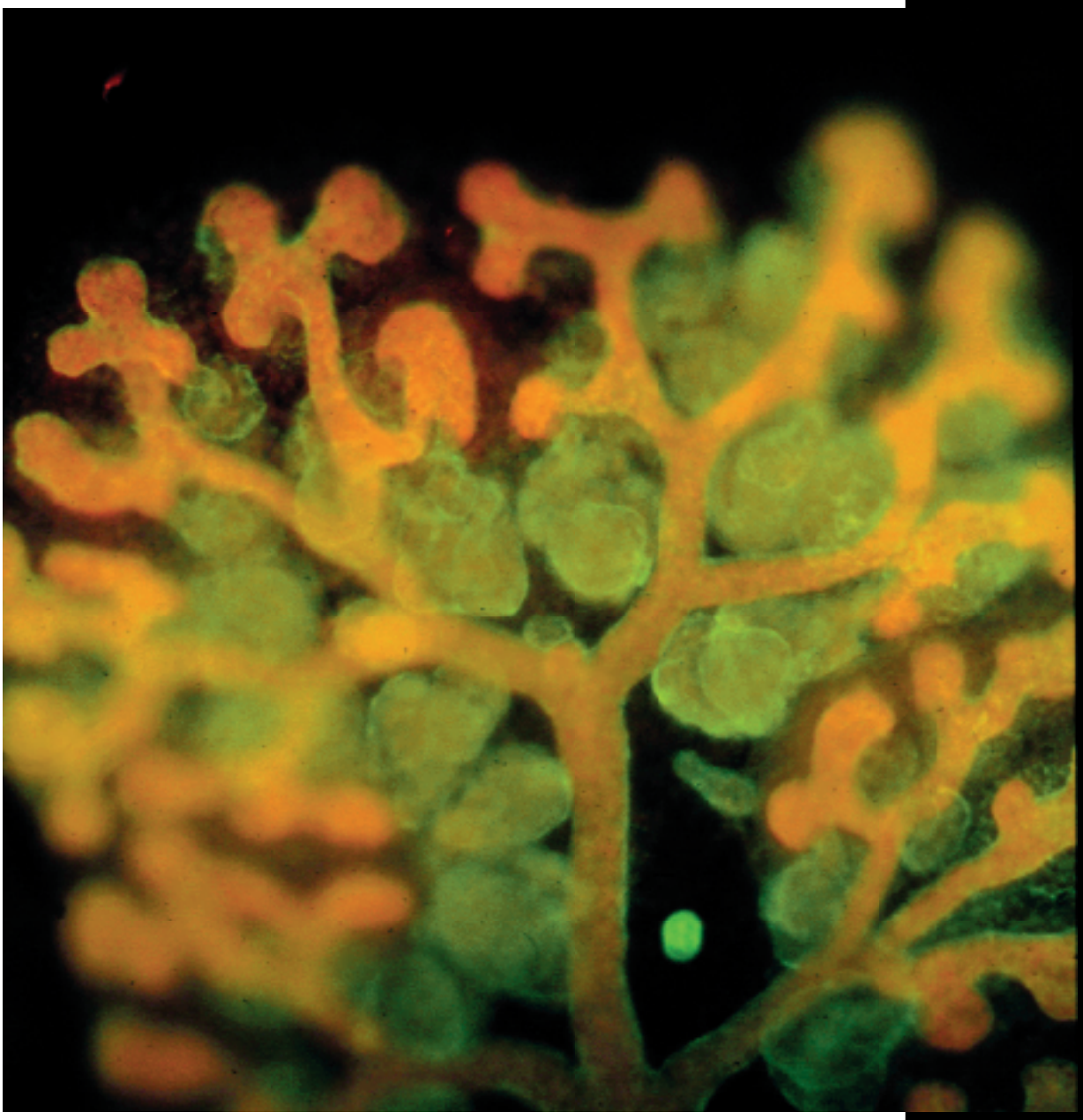
# BSDB Newsletter

Summer 2000



British Society for Developmental Biology

## Autumn Meeting 2000
## Branching Morphogenesis

**Front cover**:
Branching morphogenesis of the urinary collecting duct system in a developing mouse kidney. A kidney rudiment was removed from an 11-day embryo and was maintained in organ culture for 96hrs, during which time the ureteric bud grew and branched to form a collecting duct tree (red + green staining), and also induced the formation of excretory nephrons (green staining alone) from the surrounding mesenchyme. The collecting duct is one of many systems that will be discussed in this Autumn's BSDB conference on branching morphogenesis.
Photo courtesy of Jamie Davies, Edinburgh.

# BSDB Newsletter

Summer 2000 No. 41

## Editorial

First, welcome to the new millenium and to a new format Newsletter (apologies also for the time it has taken to get to you). Following a suggestion mooted at the AGM in Warwick, we are making the first steps towards producing the Newsletter largely online. The proposal is that the next Newsletter (ie Winter 2000) will be sent out to members by e-mail in Portable Document Format (PDF), which can be read in the freely available Adobe Acrobat Reader program. (Hopefully this will also mean it will get to you a little quicker).

Of course, we are expecting that this will not appeal to all our members and so we are asking you to let us know what you would prefer. As we do not have e-mail addresses for all of you, the proposal is that if you **do** want to receive the Newsletter by e-mail, then you should send us your e-mail address (please check the details of how to do this on **page 20** of this issue). For the time being if we do not receive e-mail from you, we will assume that you would prefer to receive the Newsletter by traditional means.

Having said that, we are keen nonetheless to complete our e-mail database. We would be very grateful if members could **send us their e-mail addresses** if they feel we may not have them (again, please be sure to check how to do this on **page 20**). In the longer term, moving almost entirely to the electronic format will reduce our costs significantly and greatly facilitate communication within the Society.

As well as a new format, we would like to introduce/reinstate some new features. In particular, this issue sees the return of the Chairman's letter, which here raises important issues about the relationships and responsibilities of scientists to the rest of society, and indicates ways in which the BSDB might become more actively involved in interactions with the public. Other aspects of this are also addressed by Paul Martin who has been elected by the BSDB committee to represent our views on the newly formed UK Life Sciences Committee (see News).

Finally, I would like to take this chance to encourage all our readers to contribute to the Newsletter. In particular, we would like news articles, meeting reports (our own and other developmental meetings), comments (good and bad) and even a little gossip. Any contributions should be forwarded to me, Andy Furley, at a.j.furley@sheffield.ac.uk

*The Editor*

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BSDB Autumn Meeting, 2000

## Branching Morphogenesis

York, 13-15th September

The **Registration Form** and other details can be found on **page 7**. The **Programme** of the meeting appears on **page 6**

**Registration, Payment and Abstract Deadline is 28th July 2000**

# News

## BSDB Committee changes

The Committee sees the departure of Vernon French (Edinburgh), Liz Jones (Warwick) and Daniel St Johnson (Cambridge). Their places are taken by Anthony Graham (London), Alfonso Martinez-Arias (Cambridge) and Guy Tear (London). Vernon's departure vacates the post of Publications Secretary, which is taken up by Andy Furley.

## The Waddington Medal

We are pleased to announce that this year's Waddington Medal was awarded to Peter Lawrence, which he received at the Spring Symposium in Warwick. In true Lawrentian-style, Peter used his acceptance talk to inspire us with a polemic on the shortcomings of modern science, much of it unnervingly accurate. He left us, and many of the students in particular, in a mixed state of elation and depression. Peter's deep and genuine love of doing science is a continuing inspiration, and his keen cynicism of scientific politics will forearm all of us for the realities of how science is done. More on Peter can be found in the Chairman's letter.

## UK Life Sciences Committee – looking after the interests of the bioscience community

Nowadays science is seldom out of the news and the bioscience community can either benefit or suffer greatly from this hugely heightened media attention. The purpose of the UK Life Science Committee is to allow us all to operate with greater coherence and visibility than in the past and to look after our interests in today's cut and thrust political climate. Chemistry already has the RSC which represents the broad interests of chemists whilst still allowing individual societies freedom of movement, but until recently the biomedical sciences have been much less well represented. Martin Raff and colleagues recently gathered together a large number of the societies representing the various branches of the life sciences, from the huge Zoological Society of London (over 13K members) to the minnows (excuse the pun!) of The British Marine Life Study Society and including us, the BSDB, to form this new organisation, the UKLSC, with the role of speaking with one voice to the media, the government and the research councils, for the things we need and want. Recent successes have included a promise of significant stipend increases for research council funded PhDs and the introduction of more 4-year PhD programmes. In fact, largely through UKLSC action, postgraduate education is now an active policy area for the government.

There is an ongoing programme to aid quality science education in schools and the UKLSC sponsors school level videos on topics like genetic engineering, so that in 10 years time we'll all have PhD students who know significantly more than we do before they even start their benchwork!

There is also a push to strongly represent our interests regarding animal experimentation, particularly given the counter-lobbying planned against all experimentation and "tinkering with nature" planned for the lead up to the next general election.

Currently the BSDB pays just over £600 in annual subscription to the UKLSC, although this may vary in order to fund particular projects. I represent the BSDBs interests on this committee and so if you have any burning suggestions about things we should do, then email them to me at paul.martin@ucl.ac.uk.

## BioMedNet relaunch – new jobs site

BioMedNet, the popular integrated website for biological and medical researchers alike, recently announced that it has reinvented itself. Now at www.bmn.com, the site boasts innovative personalization and customization features, which will allow users to select their own content, while a new interface makes it quicker and easier to navigate.

From the launch date all users can enjoy free full-text access to all Trendsand Current Opinion journals until September. From June, they will also have access to one of the most innovative new features within the site – a fully personalized life science review database containing over 7000 full-text articles. From this, users can construct their own 'virtual journals'.

Another addition is the partnership with the sciencejobs.com recruitment website, a new Reed Elsevier initiative between BioMedNet, Cell and New Scientist, that will be launched at the same time. Together with SciQuest and Embase, sciencejobs.com co-sponsored BioMedNet's relaunch.

## E-mail address update

In an effort to streamline our communications we are asking **all BSDB members** to make sure that we have their e-mail addresses. For information on how to do this, and how to receive the next issue of the Newsletter by e-mail, please see instructions on **page 20**.

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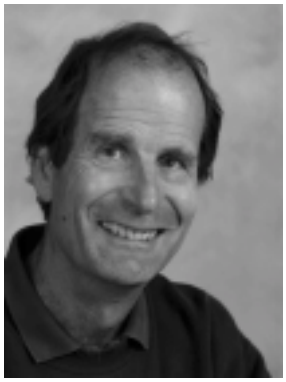
*News & comment on any aspect of BSDB activities or, indeed, the wider politics of science, is always welcome and should be sent to the Editor, Andy Furley, at* a.j.furley@sheffield.ac.uk

# From the Chairman

One of my first official duties as Chairman was to present the Waddington Medal to this year's winner, Peter Lawrence. Peter requires little, if any, introduction to most members of the BSDB, but it is probably worth pointing out to those of you under thirty, that he was doing developmental biology before you were born!



In selecting Peter for this year's award, the members of the committee were mindful not only of his past achievements but also of his continuing outstanding contributions to the field.
Beginning in the 1960's with some classic studies of patterning abnormalities in the abdomen of Oncopeltus that led to the famous "Sand" model, Peter's research has remained focussed on discovering the internal logic that underlies the patterning of all multicellular organisms. In the 1970s he embraced and developed the concepts of selector genes and lineage compartments first promulgated by Garcia-Bellido, with some seminal studies of the *engrailed* gene.

With the dawning of the molecular era, Peter was quick to take advantage of the new reagents and technologies, first to study the allocation of cells in the early embryo and subsequently the role of *wingless* in elaborating on these early patterns. Most recently, his quest for the elusive morphogen has come full circle with the elucidation of the role of the signalling protein Hedgehog in patterning the abdominal segments of the adult fly.

Peter is of course equally well known for his uncompromising views of the ethics and conduct of scientific research and many of these were entertainingly rehearsed as he regaled us with recollections of his mentor, Sir Vincent Wigglesworth.

The Society owes a great debt of gratitude to my predecessor Jim Smith, under whose excellent stewardship it has gone from strength to strength. Jim leaves us with membership at an all time high and with ever increasing levels of support from our principal benefactor, the Company of Biologists. Thanks to the generosity of the Company, we are now able to offer more awards for attendance at our own meetings – as well as for travel to other meetings – than ever before: details of these awards and how to apply for them appear elsewhere in this edition.

This spring we said farewell to three members of the committee: Vernon French, who, as Publications secretary has produced the Newsletter for the past five years and Daniel St. Johnston and Liz Jones, both of whom have served on the committee since 1995. We thank them for their many and varied contributions.

Progress in developmental biology has grown at a breathtaking rate in recent years and as we enter this new millennium it seems appropriate to reflect upon the implications of this unprecedented growth in knowledge, both for the research community and for society in general.

One of the most important and exciting breakthroughs has been the discovery of the unifying principles that underlie development within both the animal and plant kingdoms.

This discovery has opened the way to a rapid transfer of knowledge - and technologies – from one system to another, so that what is learned from, say, Drosophila today, can easily be applied to mouse, or even human, tomorrow. Thus whether we like it or not, the results of our largely curiosity-driven research will have increasing relevance, and the potential for application to the treatment of human disease and – more disquietingly - the manipulation of human development.

It is a comprehension – however imperfect – of this potential that lies at the heart of the unease felt by many throughout society and which is skilfully articulated by the opponents of scientific progress. We may like to dismiss their attacks as the outbursts of reactionaries – yet it ill behoves us to ignore the genuine concerns of the general public; besides, how many of us – at least at the beginnings of our research careers – would not have subscribed to the dictum (attributed to the Prince Charles) that we should "use science to understand how nature works, not to change what nature is."? And how many of us while finding the patenting of genes by pharmaceutical companies unacceptable, would not willingly accept support from these same companies for our own research?

These are complex issues and it is arrogant to suppose that scientists know best, still more so to abdicate responsibility for the consequences of our activities.

I strongly believe that we could – and indeed that we have a duty to do far more to inform the rest of society about the goals and implications of our research work. One way in which – as a Society – we might contribute to this enlightenment would be to provide a forum for public education and debate at our annual symposium. This is an idea I intend to pursue with the rest of the committee over the coming months but any suggestions from the wider membership will be extremely welcome.

***The Chairman***

# From the Treasurer

## *TRAVEL GRANTS*

The BSDB awards three types of travel grant to members, with preference given to graduate students and postdocs.

**BSDB Spring and Autumn meetings:**
These are the only UK meetings for which there is BSDB support, and grants cover basic travel and conference expenses (but not conference dinners!). We are currently able to fund demand but, if numbers increase, preference will be given to members who present posters (but see comment on foreign meetings).

BSDB members based abroad are eligible for a contribution (max £400) towards attending BSDB meetings.

**Practical courses:** Support of up to £500 is available for these courses and, at the moment, all applicants are funded. If more than about 8 members a year apply, however, a selection procedure will be introduced.

**Foreign meetings:** This is the category for which there is greatest demand and we cannot fund everyone. BSDB will give members a contribution (max £400). Current policy is as follows: no more than two people from one Department or one person from a group will be awarded a grant to go to a particular meeting. Preference will be given to members presenting work.

**Also:** The Treasurer now has a small additional fund to support other activities eg. travel within the UK, or the USA, in order to visit laboratories. Please email the Treasurer with any appropriate request.

## *Small Meetings*

Members may approach the **Treasurer** for seed funding to help with organising developmental biology events (eg one-day meetings) that involve other institutions and at which students and postdocs are encouraged to attend and present work. The BSDB currently supports the meetings of several local developmental biology groups with small (~£250) annual contributions. Any further requests for this type of funding should be made in a letter to the **Treasurer**.

## *Louie Hamilton Fund*

There is a small amount of money available from the Louie Hamilton Fund to provide travel support for handicapped members. Applicants should contact the **Treasurer**.

### To apply for a travel grant:

- Members should first complete the Travel Grant Application form and send it to the Treasurer. (see **Forms** section at the back of this issue or see the BSDB website: www.ana.ed.ac.uk/BSDB/bsdbgrant.htm)
- Application 3-4 months in advance is advised so that the BSDB contribution can be used as a lever to prise the rest of the money from other sources. No grants will awarded in arrears
- **All applications for grants to attend a BSDB meeting must be in the Treasurer's hands a week before the meeting deadline.**

**Please note**: no-one will be awarded more than one travel grant per year.

## *SUBSCRIPTIONS*

** **1995** "Student-rate" members should quickly upgrade their subscription to **£20 or they will be culled (humanely).**

## *Financial Statement*

The financial statement for the year ending 31 July 1999 appears towards the back of this issue.

***Ottoline Leyser, Treasurer***

# Graduate Students

The Graduate Student Rep on the BSDB Committee is **Alison Wilkie**. Her job is to communicate Graduate Student views (good or bad) to the BSDB Committee, so please do not hesitate to contact her - see the addresses page at the back. Alison would like to encourage all students to apply for the travel grants, not only to BSDB meetings but for overseas meetings, courses, and workshops as well.

# Next BSDB Meeting

BSDB Autumn Meeting, 2000 University of York

# 'Branching Morphogenesis'

Scientific Organisers: **Ottoline Leyser** and **Jamie Davies**.

## Provisional Programme

### Wednesday 13th September

12.00 Registration, lunch

**1. Venation patterns**

| | | |
|---|---|---|
| 2.00 | Thomas Berleth | Tissue Patterning in the Plant Vascular System |
| 2.45 | Jose De Celis | Positioning and differentiation of longitudinal veins in the Drosophila wing |
| 3.00 | Coffee/Tea | |

**2. Single cells**

| | | |
|---|---|---|
| 3.30 | Sarah Guthrie | Neurons |
| 4.15 | Claire Grierson | Trichoblasts |
| 5.00 | Tony Trinci | Branching in fungal mycelia and its importance in industrial processes |

Evening poster session

### Thursday 14th September

**3. Bifurcation**

| | | |
|---|---|---|
| 9.00 | Saverio Bellusci | Lungs |
| 9.45 | Christos Samokovlis | Insect trachea |
| 10.30 | Coffee/Tea | |
| 11.00 | Axel Thomson | Regulation of Branching Morphogenesis in the Prostate |
| 11.45 | Jamie Davies | Branching morphogenesis in the developing mammalian kidney |

Lunch/Posters

**4. Contributed paper session**

Conference Dinner

Want to receive the next

**Newsletter by e-mail?**

See Page 20 for details

### Friday 15th September

**5. New initiation**

| | | |
|---|---|---|
| 9.00 | Volker Nehls | Matrix determinants for capillary morphogenesis and three-dimensional cell migration |
| 9.45 | Jocelyn Malmy | Lateral root formation in response to environmental signals |
| 10.30 | Coffee/Tea | |
| 11.00 | Jeffrey Rosen | C/EBPß controls cell fate determination during mammary gland development |
| 11.45 | Ottoline Leyser | Auxin and the control of shoot branching in Arabidopsis |

12.30 Lunch and close

**Registration Form - Next Page**

# BSDB Autumn Meeting 2000 – Registration Form

University of York, 13th-15th September

Name: ……..…….. Title: ……....

Address: ……

……

Tel: ……..…… Fax: ……

Email ……..……

Poster abstract submitted by email? (Yes/No)

| | Wednesday 13 September | Thursday 14 September | Friday 15 September | Totals |
|---|---|---|---|---|
| Members' Meeting Package*: members £215, student members £175 | | | | |
| Supplement to members package for en suite accommodation: £24 | | | | |
| B & B en suite room per night: £38† | | | | |
| B & B standard room per night: £26 | | | | |
| Lunch: £7 per day | | | | |
| Dinner: £10 | | | | |
| Conference Dinner: members £25, students £20 | | | | |
| Registration: non-members £140, student non-members £105, members £125, student members £90 | | | | |
| Late registration fee £20 (Must be paid for registration after 14 July | | | | |
| | **GRAND TOTAL** | | | £ |

Special requirements (eg diet) ……..……

*__Members' Meeting Package__ includes registration, abstract book, lunch, tea and coffee on all three days of the meeting plus dinner, bed and breakfast in standard accommodation on Wednesday 13th and Conference Dinner, bed and breakfast in standard accommodation on Thursday 14th.

†There is a strictly limited number of en suite rooms. These will be allocated on a first come, first served basis. Please contact the secretariat to check availability before completing your booking form. If you request en suite accommodation and it is not available you will be allocated a standard room and charged accordingly.

**Payment of Fees**
***By cheque:*** cheques should be in pounds sterling, drawn on a UK bank and made payable to the **University of York**
***By invoice:*** please return an official order from your institution with this form and we will invoice them for your fees.
***By credit card***: complete your details below and we will charge your fees to your credit card (Visa/Mastercard only).

Name of Card Holder (as it appears on the card)……

Card Number: …… Expiry Date: ……

Statement/billing address: ……

……

**Registration:** The deadline for receipt of registrations is **28 July 2000**. After this date a £20 late registration fee will be payable. You are liable for all fees on cancellations made after 25 August.

**Please return this form with payment to: Meeting Secretariat, IFAB Communications, Department of Biology, University of York, PO Box 373, York YO10 5YW, UK.**
**Fax: +44 (0)1904 433029**

# Future BSDB Meetings

**Spring Symposium Meeting** — **University of Sussex**

## 'Cell & Tissue Morphogenesis'

**3-6th April, 2001** — **Joint Meeting with BSCB**

This meeting is being organised jointly by **Andy Furley** and **David Wilkinson** for the BSDB and **Charles ffrench-Constant, David Garrod & Alan Hall** for the BSCB.
It will be held at the **University of Sussex, Brighton** on **3-6 April 2001**.

The meeting will consider the role of adhesion in cell and tissue morphogenesis.

*Confirmed speakers include:*

Konrad Basler
Nick Brown
David Colman
Elisabetta Dejana
Mark Ginsberg
Dan Kiehart
Mark Krasnow
Masatoshi Takeichi
David Wilkinson
Gary Borisy
Peter Bryant
Shoukat Dedhar
Filippo Giancotti
Jeff Hardin
Eli Knust
Elior Peles
David Van Vactor

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**Autumn Meeting** — **Magdalen College, Oxford**

## 'Boundaries in Development'

**20-21st September, 2001** — **BSDB**

This meeting is being organised by **Marcel Van Den Heuvel**.
Further details in the next Newsletter.

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## *Topics for Future Society Meetings*

One of the major tasks of the BSDB Committee is to select topics for future meetings and then to ensure that these meetings are well organised and successful. It is obviously crucial that meetings are supported by the members of the Society, and we always welcome suggestions for future topics. If you have an original idea for:

- **a major Spring Symposium,**
- **a smaller two day Autumn meeting**
- **a one day workshop,**

please get in touch with the **Meetings Secretary, Jamie Davies** (jamie.davies@ed.ac.uk)

# Other Related Meetings & Courses

## Beyond the Genome: Understanding and Exploiting Molecules in the 3rd Millenium

**18th International Congress of Biochemistry and Molecular Biology**

*Organised by the Biochemical Society*
*International Convention Centre, Birmingham, UK*
*16-20th July 2000*

Registration still being accepted. See http://www.iubmb2000 for details.

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## The Evolution of Developmental Mechanisms

**The Anatomical Society of Great Britain and Ireland**

*Winter Meeting*
*Royal Holloway College, Egham, Surrey, UK*
*3-5th January 2001*

The meeting will include a symposium on the evolution of developmental mechanisms, organised by **Anthony Graham*** (King's College London) and **Gillian Morriss-Kay** (University of Oxford). This will explore the genetic basis of development across a range of organisms, in order to provide insight into the way common mechanisms have been adapted to make body structures in organisms with different evolutionary specialisations.

The preliminary list of speakers is as follows:

Alex Gould *(MRC Mill HIll)*
Chuck Kimmel *(University of Oregon)*
Claudio Stern *(University College London)*
Peter Holland *(University of Reading)*
Steve Wilson *(University College London)*
Antonio Simeone *(King's College London)*
Olivier Pourquie *(University of Marseille)*
Bob Hill *(University of Edinburgh)*
Gillian Morris-Kay *(University of Oxford)*
Linda Holland *(University of California San Diego)*
Nicole Le Douarin *(CNRS Paris)*
Paul Sharpe *(King's College London)*
Anthony Graham *(King's College London)*

*see Committee addresses at the back for contact information

**Want to receive the next Newsletter by e-mail?**
**See Page 20 for details**

## Advanced Course in Cardiac Morphology

*Thursday 13 – Friday 14 July 2000*

This two day course is designed for those who wish to extend their acquaintance with the congenitally malformed heart. All registrants should therefore either have attended the Foundation Course (February 2000), or else be entirely comfortable with the basic structure of the congenitally malformed heart. The course will address the more complex problems of the malformed heart, such as the effect of associated malformations on hearts with atrioventricular septal defect; the analysis of hearts with isometric atrial appendages; the details of pulmonary arterial supply in tetralogy of Fallot with pulmonary atresia; and the variants of straddling and overriding atrioventricular valves. The programme will be based on video presentation, and ample time will be provided for questions and discussion.

Fees for this meeting are £250, or £150 for technicians.

The course is taking place at the Institute of Child Health from Thursday 13 – Friday 14 July 2000.

For further information and a detailed programme, please contact the Courses and Conferences, Institute of Child Health, 30 Guilford Street, London WC1N 1EH.
Tel: +44 (0)171 829 8692/813 8394
Fax: +44 (0)171 831 6902
Email: Courses@ich.ucl.ac.uk

## Development of the Enteric Neuromusculature

**ISAN Satellite Meeting**

*Monday 17 July 2000*

Lectures will include, Neural crest cell migratory pathways; structure of the enteric nervous system, maturation and maintenance mechanisms; ret and gdnf, and interstitial cells of Cajal; to be delivered by a wide faculty of speakers, including Professor Peter Milla of Great Ormond Street Hospital; Dr Heather Young and Professor John Furness from Australia, and Dr Jolanta Pitera.

Fees for this meeting are £75, or £55 for students.

The course is taking place at the Institute of Child Health, from 9.30am – 3.30pm on Monday 17 July 2000.

For further information and a detailed programme, please contact the Courses and Conferences, Institute of Child Health, 30 Guilford Street, London WC1N 1EH.
Tel: +44 (0)171 829 8692/813 8394
Fax: +44 (0)171 831 6902
Email: Courses@ich.ucl.ac.uk

## *Essentials of Glycobiology*

Edited by A Varki, R Cummings, J Esko, H Freeze, G Hart and J Marth
Cold Spring Harbor Laboratory Press, 1999
ISBN 0-87969-560-9 (printedhardcover) $95
0-87969-559-5 (cloth) $175

Developmental biologists with molecular leanings, and that includes almost all of us nowadays, have long embraced the world of nucleic acids and proteins. The convenience of the Central Dogma allows us to move smoothly back and forth from genotype to protein function to phenotype, and the ease with which we can now do this has gained us much understanding about the roles of particular proteins in the development of animals and plants. In contrast to this nice clean world of protein biology, the biology of carbohydrates is a frightful mess; glycans (chains of sugars or modified sugars) come in a bewildering variety of structures, they may be attached to different proteins and lipids, the same glycoprotein type may show heterogeneity of glycosylation even in the same cell and, what is worse, there is no simple link that allows one to predict, from the genome of a cell, the list of glycans that it will express. Therefore, although glycans account for a large proportion of cellular and extracellular material, most developmental biologists prefer to ignore them.

Every so often, though, there comes a discovery that reminds us that glycans and their interactions with proteins may play an important role in development after all. Examples include binding between sperm and egg and induction of the acrosome reaction, presentation of growth factors, such as FGF2, to their high-affinity receptors, and targeted destruction of hyaluronans mediating meseodermal condensations. Some interesting developmental mutants are now known to arise because of defects in glycans rather than proteins – these include a form of renal agenesis in mice that is caused by the absence of an enzyme required for synthesis of a particular type of heparan sulphate, and Drosophila's *sugarless* and *sulphateless*, which also fail to produce normal glycans and result in a phenotype similar to that of *wingless*. What is more, it is now becoming clear that even the nucleus, once thought to be a safe refuge for glycophobic molecular biologists, is rich in specialised carbohydrate structures that play a role in nuclear import and the regulation of gene expression. It will therefore be increasingly important for developmental cell biologists to gain some understanding of the world of glycans, and this book, which grew out of a Cold Spring Harbour course, is an excellent starting point.

*Essentials of Glycobiology* is about the size and weight of Gilbert's *Developmental Biology,* a tome that is surely known to all readers of these pages (*The 3rd Edition is lighter! Ed.*). Although it is an edited work containing contributions from a number of researchers, it has a remarkably homogenous feel and reads very well as a single text-book. The text is well-illustrated, in full colour where this is helpful.

The book begins by defining the term 'glycobiology' as 'the study of the structure, biosynthesis and biology of saccharides…', and by giving an excellent single-chapter overview that also functions as a route-map for the rest of the book. Subsequent chapters follow a fairly conventional plan, considering first the structures and metabolism of monosaccharides, and then describing how these are modified and built up into glycan chains such as the N- and O- glycans of glycoproteins, glycosphingolipids, glycoasminoglycans and nuclear glycans. While much of this material is dominated by biochemical and structural information, there are interesting chapters on the evolution of glycans and the phylogeny of particular structures. Many of the most interesting functions of glycans are mediated by their ability to bind to specific proteins, and the book contains much information on the mechanisms for protein-glycan interactions, first in terms of general principles and then in a series of chapters devoted to different families of lectins (glycan-binding proteins) of animals, plants and micro-organisms.

While these mainly structural and biochemical discussions occupy the first two thirds of the book, the last third is devoted more to glycan function and the means by which it may be studied. There are chapters on naturally occurring disorders of glycan synthesis, changes of glycan expression during development, changes of glycan expression during oncogenesis, and the role of glycans in mediating the struggles between parasites and their hosts, and clear discussions about the relative benefits of the different ways (genetic, biochemical, pharmacological etc) in which glycan function can be studied *in vitro* and *in vivo*. The test ends with a brief overview of the current clinical and biotechnological uses of glycobiology.

Overall, I found the book to be excellent, from the contents of the main text to the thoughtful way in which a key to symbolic representations of saccharides and their linkages is presented on the inside of the front cover, and a large and helpful glossary is provided just before an comprehensive eleven page index. If I have any criticism of this work, from the point of view of readers of this newsletter, it is that developmental problems receive rather little consideration in comparison with pathological and immunological ones. Nevertheless, as somebody who has never considered himself to be a 'glycobiologist' but whose developmental research seems to repeatedly bump into glycoconjugates, I have found this book a mine of valuable information. If your research brings you into contact with glycans, buy this book. If not, recommend it to your librarian anyway, because you never know when your experiments will force you to leave that safe world of DNA and proteins and to embark on sweeter adventures….

***Jamie Davies***

# Book Reviews

## *The Biological Basis of Cancer*

Robert G. McKinnell, Ralph E. Parchment, Alan O. Perantoni & G. Barry Pierce
Cambridge University Press, 1998, 378 pp
ISBN 0-521-59695-5 (paperback) £22.95
0-521-59298-4 (hardback) £65.00

This book is designed for an undergraduate course, covering everything from molecular to clinical aspects of cancer. It has chapters on more basic topics, such as metastasis, carcinogenesis, genetics and epidemiology, as well as on more specialised topics, such as biotherapy, descriptions of particular cancers, cancer-associated genes and cancer in nonhuman organisms. (Plants get tumours too, apparently, albeit benign ones, known as galls.)

In addition, the book has several black and white photos and illustrations, a clear index, an extensive bibliography (over 60 of the pages are devoted to this) and an excellent glossary. (Having said this, it still didn't manage to clear up my student's confusion between a second, primary tumour and a secondary tumour.) Equally important is the book's size. It's just about small enough to carry around (my copy has clocked up over a thousand miles on ScotRail) and it's written in such a way that it's incredibly easy to dip into (for example, when you're waiting for a train on a freezing platform…).

I thoroughly enjoyed reading this book and I learnt a lot. But it's an odd mixture, maybe because different authors have written the various chapters. Much of the content is suitable for the interested, intelligent layman (or woman), but other parts cover quite complex, technical information. For example, the book starts with a section on letters illustrating the clinical aspects of cancer. This is series of letters written to and from people given such names as Uncle Harvey, Cousin Janet and Aunt Molly (sic). They make informative, but almost voyeuristic reading, and the section resembles the problem pages of a woman's magazine. Such an approach gives away the book's American origins, but I think it probably works very well for the audience for which it is intended. It certainly brings home the very human aspect of cancer as a disease which touches all our lives (three of my friends have died of the disease within the last year).

Other parts of the book (for example, those on cytoreduction theory, multimodality therapy and cancer-associated genes) require a "hard read". But it's worth the effort, as it's fascinating, albeit depressing, reading. It really made me appreciate the difficulty of achieving the almost fictional state of cancer "cure" and how hard it is to eradicate every single cancer cell, even with a combination of strategies. It defines the purpose of cancer therapy as not to cure, but "to achieve a normal life expectancy in the cancer patient with no more than minimum impact of the cancer on daily living."

But it's not all doom and gloom. There is a fascinating chapter on Biotherapy, which is perhaps where there is the strongest link between developmental biology and cancer. The potential usefulness of alternative therapies relies on our understanding of the processes controlling normal growth and differentiation (and an appreciation of what is different in malignant situations). For example, some biotherapies target specific antigens or receptors on malignant cells with cytolytic immune modulators or toxins. Alternatively, tumour growth may be controlled by antagonists of known trophic factors, such as steroid hormones (e.g. antioestrogen therapy in carcinoma of the breast).

Biotherapy is a relatively new strategy for treating malignancy, and the field is extending into the arena of molecular modification as a form of therapy. There is a lot of work in progress but, as the book states, "at present too little is understood about the factors that control normal tissue renewal, or exaggerated tissue renewal in tumours, to proceed toward therapeutic development." If research into this area of development (in its broadest sense) continues at the same rate as it's doing in other areas, I don't think that our knowledge will be too little for too long.

Ironically, the fast pace of research is probably going to be this book's downfall. I have a nagging suspicion that certain chapters will rapidly become out of date. This will mean that I will be forced to do MedLine searches instead of finding the information (in a well-written and understandable format) in just one book. That will be a pity, particularly since I come up against cancer frequently in my undergraduate teaching. The book, however, will always remain in an easily accessible position on my bookshelf, because its good, clear and simple explanations of the subject are invaluable.

I'm unsure of whether there are any undergraduate courses devoted to cancer in UK Universities. If so, this book would be the perfect text for such courses. But I'm probably not alone in the fact that I deal with cancer-related issues in my general biology teaching. I'd highly recommend this book if you're in a similar situation—so that if you do have to reach for MedLine in the future, you will at least be able to make sense of what you're reading.

***Sarah Wedden***

## *Fungal Morphogenesis*

David Moore.
Volume 35 in the Developmental and Cell Biology Series, Cambridge University Press (1998) 469 PP
ISBN 0-521-55295-8 (hardback) £22.95

This is a vast book giving a broad account of fungal biology, centered on developmental processes but not restricted to them. The author has the noble aim of integrating, in a holistic fashion, biological parameters from metabolism, genetics and environment into an understanding of developmental choices and mechanisms in fungal development. Few people would attempt this in a model system that has well studied genetics and is perfectly suited to laboratory investigation, and the author makes it very clear that fungi do not have these attributes. Is the noble aim achieved? Inevitably, no.

The main difficulty is a complete lack of focus. I joyfully approached this book hoping to read

# Book Reviews

about developmental strategies in fungi, how they relate to those of other organisms, and what unique features could be learned from a system I am not familiar with but have some experience of. Alas, the book is not presented in this way. There is no introduction to fungi as a system of study, or to the different classes of fungi. For the first 140 pages or so one is faced with a bewildering account of fungal biology and metabolism. The early pages of this book would have benefitted from the inclusion of some helpful diagrams or cartoons, but the first 100 pages contain just 5 simple line diagrams, not much help in getting into a complex subject on unfamiliar ground. A nice account of hyphal growth (Chapter 2), which harbours the central message of the book, rather undoes itself by being far too involved. Many times the author presents an overwhelming and vast description of observations that might relate to a problem, but leaves the reader to decide what matters. Oddly, the chapter on metabolism and biochemistry of hyphal systems (Ch. 3) includes a lot of unnecessary information on familiar subjects like glycolysis, the TCA cycle, and gluconeogenesis and allows them a full-page diagram each.

But better is in store in the central chapters that deal with physiological factors favouring morphogenesis (Ch. 4) and the genetic component of hyphal differentiation (Ch. 5). By integrating the pervasively descriptive information with an explanation of mechanisms behind morphological processes, the book begins to get its message across. The way light regulates development of reproductive structures is considered, from the nature of photoreceptors and possible signals generated in response to light to enzyme activities acutely regulated by it. This biochemical link between the organism and environment relates to the "how" in development that features in these two chapters. There is a brief account of mating control systems in budding yeast and other fungi, and a discussion of the way in which these complex genetic series are a model for developmental gene regulation in general. There is a surprisingly short section dealing with dimorphism in yeasts. A great deal is now known about genetic pathways controlling dimorphism, including multiple signal transduction systems and transcription factors, but much of this understanding has come very recently. Were the book to be written now (instead of 1995-6) it would not be out of place for this topic to warrant a chapter by itself. More depth is given to other topics, including an interesting account of conidiophore development in A. nidulans, and the mechanistic pathways involved. The final long chapter (150pp), Development of form, seems largely to confirm the paucity of real understanding of, amongst other things, pattern formation and differentiation in fungi. Perhaps a closer comparison/contrast with well understood systems would have informed the reader of the nature of the difficulties and challenges that remain.

The author is clearly an expert dedicated to his subject. The book succeeds in capturing his enthusiasm from the start. But there are problems in knowing too much. The back cover and preface suggest that any biologist can readily approach this book and obtain an understanding of fungal morphogenesis. I cannot in all conscience agree with this. The book is clearly written for those with either an advanced understanding of, or advanced interest in, fungi as a system. A book of 400 pages of text and a bibliography that itself stretches to 60 pages is accompanied by the skimpiest of indexes and – incredibly – no glossary of terms at all. The poor organization and excessively chatty style do not make this coherent and above all, fail to impart the information that is undoubtedly concealed between the covers. For a book of this size that has such grand intentions, strict and considerate editing would have improved it immeasurably.

***Peter Thomason***

# Books Received

- **Mechanisms of Cortical Development.**
  David J. Price & David J. Willshaw; Oxford Science Publications, 2000, £69.50
- **Photography with a Microscope**
  F.W.D. Rost & R.J. Oldfield; Cambridge University Press, 2000, £55.00

The following books are languishing, unreviewed, on my desk.

- **The Shoot Apical Meristem: its Growth and Development.**
  R.F.Lyndon; Cambridge University Press, 1998, £55.
- **Endocrine Cell Culture.**
  S.Bidey (Ed); Cambridge University Press, 1998, £16.95.
- **Dying to Live: How our Bodies Fight Disease.**
  M.D.Kendall; Cambridge University Press, 1998, £17.95

**Come on! Review a book and get it for free - contact:** a.j.furley@sheffield.ac.uk

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**Denis New: Physiological Laboratory, Downing Street, Cambridge CB2 3EG.**
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For further information contact Clare Wells, lms@wiley.co.uk quoting the reference BSDB.

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Please give further information in support of application:

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Dr Ottoline Leyser, BSDB Treasurer, The Plant Laboratory, Dept of Biology,
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# BSDB Financial Statement – Year Ended 31 July, 1999

**Balance Sheet**

| 1997/98 £ | | 1998/99 £ |
|---|---|---|
| | **Investments** | |
| 88,187 | Baillie Gifford Managed Fund (1,2) | 98,640 |
| | **Current Assets** | |
| 29,742 | Barclays Bank High Interest Account (2) | 31,134 |
| 13,156 | Barclays Bank Current Account | 9,462 |
| 2,674 | Barclays Bank: Louis Hamilton Account (3) | 2,746 |
| 45,572 | | 43,342 |
| 1,167 | Less: Unpresented cheques | 856 |
| 44,405 | Net Current Assets | 42,486 |
| **132,592** | **Total Funds** | **141,126** |

**Income & Expenditure Account**

| Income | | £ | Expenditure | £ |
|---|---|---|---|---|
| Membership (Standing Order) | | 14,445 | Grants (Travel & Courses) | 18,473 |
| Membership (Cheques) | | 722 | EDBO etc | 600 |
| Capitation Fee (CoB) | | 11,858 | Newsletter | 3,687 |
| Sussex Meeting | | 2,622 | Small Meetings | 1,000 |
| Royalties | | 92 | Manchester meeting | 7,335 |
| Sale of addresses | | 657 | Committee & administration | 2,585 |
| Interest and Investment Appreciation: | | | Membership reimbursement | 285 |
| Barclays High Interest a/c | 1,392 | | Bank charges | 116 |
| Barclays Louis Hamilton a/c | 72 | | | |
| Barclays Current Account | 302 | | Total Expenditure | **34,081** |
| | | 1,766 | | |
| | | | Net Deficit for the Year | **- 1,919** |
| | | | Unrealised Gains on Baillie Gifford | |
| Total Income | | **32,162** | Managed Fund | 10,453 |
| | | | Fund balance at 31 July 1998 B/Fwd | 132,592 |
| | | | Fund Balance at 31 July 1998 | **141,126** |

***Notes***

*These accounts were prepared under the historic cost convention, in accordance with the applicable accounting standards and Recommended Practice of Accounting by Charities. There have been no major changes to our financial arrangements this year.*

1. *The Baillie Gifford and Barclay High Interest Account valuations are on 30.6.99 (the 1998/9 BG gain is 11.9%).*
2. *This account includes £25,500, the surplus on BSDB practical courses; this is used to provide grants for members to go on courses, and £2340 was spent in 1998/9 for this purpose.*
3. *This is the only restricted account and no call was made on it in the financial year 1998/9*

# BSDB Committee Members

The main function of the BSDB Committee is to organise our meetings, from deciding on appropriate topics to arranging organisers and venues. If you have any ideas on topics for a good meeting, or on a good venue, don't hesitate to convey them to Jamie Davies (or another committee member). The officers of the society will be happy to answer any questions relating to their specific subjects.

## Officers

### Chairman

Philip Ingham (1999-2004)
MRC Intercellular Signalling Group,
Developmental Genetics Programme,
University of Sheffield,
Firth Court, Western Bank,
Sheffield S10 2TN
Tel: 0114 222 2710 (Secretary)
Fax: 0114 222 2788
e-mail: p.w.ingham@Sheffield.ac.uk

### Secretary

Ivor Mason (1998-2003)
MRC Centre for Developmental Neurobiology,
King's College London,
4th Flr, New Hunt's House,
Guy's Campus,
London SE1 9RT.
Tel: 0207 848 6547
Fax: 0207 848 6550
e-mail: ivor.mason@kcl.ac.uk

### Treasurer

Ottoline Leyser (1999-2004)
Department of Biology,
University of York, P.O.Box 373,
York YO1 5YW.
Tel: 01904 434 333
Fax: 01904 434 312
e-mail: hmol1@york.ac.uk

### Meetings Secretary

Jamie Davies (1998-2003)
Department of Anatomy,
University of Edinburgh Medical School,
Teviot Place, Edinburgh EH8 9AG, Scotland.
Tel: 0131-650-2999
Fax: 0131-650-6545
e-mail: jamie.davies@ed.ac.uk

### Publications Secretary

Andy Furley (2000-2005)
Developmental Genetics Programme,
University of Sheffield,
Firth Court, Western Bank,
Sheffield S10 2TN
Tel: 0114 222 2354
Fax: 0114 222 2788
e-mail: A.J.Furley@Sheffield.ac.uk

### Graduate Representative

Alison Wilkie
MRC Human Genetics Unit,
Western General Hospital, Crewe Road,
Edinburgh EH4 2XU, Scotland.
Tel: 0131 332 2471 ext 3401
e-mail: Alison.Wilkie@hgu.mrc.ac.uk

## Committee Member

Julie Ahringer (1997-2002)
Wellcome CRC Institute
Tennis Court Road
University of Cambridge
Cambridge CB2 1QR
Tel: 01223 334 142
Fax: 01223 334 089
e-mail: jaa@mole.bio.cam.ac.uk

Anthony Graham (2000-2003)
Molecular Neurobiology Group,
King's College London,
4th Flr, New Hunt's House,
Guy's Campus,
London SE1 9RT.
Tel: 0207 848 6804
Fax: 0207 848 6816
e-mail: Anthony.Graham@kcl.ac.uk

Robert Kelsh (1998-2003)
Developmental Biology Programme,
Department of Biology and Biochemistry,
University of Bath, Claverton Down,
Bath BA2 7AY
Tel: (0)1225 323828
Fax: (0)1225 826779
e-mail: bssrnk@bath.ac.uk

Paul Martin (1997-2002)
Dept of Anatomy & Developmental Biology,
University College London,
Gower St, London WC1E 6BT.
Tel: 0207 679 3362
Fax: 0207 679 7349
email: paul.martin@ucl.ac.uk

Alfonso Martinez Arias (2000-2003)
Department of Genetics
University of Cambridge
Cambridge CB2 3EJ
email: ama11@cus.cam.ac.uk

Sohaila Rastan (1999-2004)
Biopharmaceutical Research UK,
SmithKline Beecham Pharmaceuticals,
New Frontiers Science Park (North),
Third Avenue, Harlow, Essex CM19 5AW.
Tel: 01279 622703
Fax: 01279 622500
email: sohaila.rastan@sbphrd.com

Paul Scotting (1996-2001)
Dept of Biochemistry, University of Nottingham,
Queens Medical Centre, Clifton Boulevard,
Nottingham NG7 2UH.
Tel: 0115 9709367
Fax: 0115 9422225
e-mail: paul.scotting@nottingham.ac.uk

# BSDB Committee Members

Kate Storey (1999-2004)
Dept of Human Anatomy & Genetics,
University of Oxford, South Parks Road,
Oxford OX1 3QX.
Tel: 01865 272161
Fax: 01965 272420
email: kstorey@ermine.ox.ac.uk

*From 1st October, 2000*
Department of Anatomy
Wellcome Trust Building
University of Dundee,
MSI/WTB Complex
Dundee, DD1 5EH, Scotland

Guy Tear (2000-2003)
MRC Centre for Developmental Neurobiology,
King's College London,
4th Flr, New Hunt's House,
Guy's Campus,
London SE1 9RT.
Tel: 0207 848 6539
Fax: 0207 848 6816
e-mail: Guy.Tear@kcl.ac.uk

Jean-Paul Vincent (1996-2001),
MRC National Institute for Medical Research,
The Ridgeway, Mill Hill,
London NW7 1AA.
Tel: 0208 959 3666 ext 2004
Fax: 0208 913 8543
e-mail: jp.vincent@nimr.mrc.ac.uk

## BSDB on the Web

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# Other Useful Addresses

### Development Editor-in-Chief

Chris Wylie,
Institute of Human Genetics,
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