BSDB Newsletter

Winter 2000
No 42

Spring Meeting 2001
Cell & Tissue Morphogenesis

British Society for Developmental Biology

Front cover legend:

The cover on this issue is the result of a novel collaboration between a research scientist at the MRC Centre for Developmental Neurobiology at Guy's, Kings' and St Thomas' Hospitals, **Dr Jim Cohen**, and a stained glass artist, **Carole Nunes**, which has led to the creation of a striking stained glass window, on the theme of Evolution and Developmental Biology, in the North Wing Link Corridor at St Thomas' Hospital.

The 'Window on Life' project commissioned by **Guy's and St Thomas' Charitable Foundation** is designed to convey to the public in an original and visually arresting way the importance and relevance of recent research findings in developmental biology.

The window comprises a series of seven panels whose themes reflect the common underlying developmental mechanisms shared by humans and simpler organisms as revealed in exciting new research findings on their evolutionary conservation. The central panel is occupied by a stylised, transparent human figure, with the nervous system revealed in its entirety. Surrounding this are six outer panels, devoted to images inspired by pioneering research on developing embryos of species of increasing complexity (leech, fly, fish, amphibian, chick, mouse).

The striking beauty of the patterns, forms and colours of the source images from the research laboratory ideally lend themselves to trans-illumination. The artist's interpretation of the images in stained glass has been enriched by the application of a number of techniques, including acid etching and painting. The dependence on light to bring the images in glass to life, serves as a metaphor, both for light's life-sustaining properties, and for its exploitation in many of the microscopic techniques that underpin the research from which many of the original images derive.

A second theme linking the components of the work draws attention, through representations of diverse images, to the variety of experimental techniques that have been applied in the search for the underlying mechanisms of development. This tells how information from research on different levels of organisation, from the molecular, through the cellular, to the whole organism, have helped inform current ideas in developmental biology.

This project was conceived with a public hospital site in mind, to reflect its relevance to medical research, and the North Wing Link Corridor at St Thomas' is particularly appropriate. Here, the window's proximity to the adjacent Thameside walk will ensure its visibility, not only from inside by hospital staff, patients and visitors but also from outside by the general public. Moreover, placement in an existing window with a southerly outlook complements the fine view of the Palace of Westminster to the north.

Clockwise from top left

LEECH

1. Dye-filled comb cell in a leech embryo
2. Egg production revealed in ventral view of adult
3. Early developing connective nerves in segmental ganglia
4. Cell lineage tracing in early embryo
5. Labelled posterior segments in early embryo
6. Segmental coelom in early embryo
7. Segmental structure of the embryonic germinal plate

8-9. Egg filled leeches

10. Neurons in segmental ganglion revealed by antibody staining

DROSOPHILA (fruitfly)

11. Homeotic (bithorax) mutant fly
12. Glial cells and neurons in the embryonic central nervous system of the blastoderm
13. Normal adult fly
14. Pattern of expression of the segmentation gene *even skipped* in the central nervous system
15. Clonal analysis in compartments in adult wing
16. Neuroblast pattern in the germ band stage embryo ectoderm
17. Subsets of embryonic central nervous system nerves distinguished by antibody staining

18-21. Segment identity in embryo revealed by staining with antibodies to different gap and pair-rule gene products

Top right (and bottom left) corners

Figure from first description (1910) by Harrison of elongating nerve fibres in tissue culture

ZEBRA FISH

22. Eye
23. Antibody labelled embryo spinal cord
24. Adult fish
25. Labelled cell clone dispersal during blastula stage
26. Pattern of retino-tectal projection in embryo revealed with fluorescent dye
27. Embryos

AMPHIBIAN

28. Limb regeneration in the newt
29. A clone of Xenopus frogs
30. Blastula cells in embryo
31. Adult frog

32. 8-cell stage Xenopus blastomeres
33. Active transcription units on a newt embryo chromosome
34. Limb regeneration in the newt

CHICK

35. Primitive streak stage embryo
36. Stained skeletal elements in embryonic wing
37. Segmental (rhombomeric) organisation of embryonic hindbrain nerves
38. Skeleton of 8 day old embryo
39. Antibody stained embryonic hindbrain nerves
40. Embryo at pipping pre-hatching stage
41. Pattern of gene expression in embryo
42. Somites and embryonic axis of 2 day old embryo
43. Twin embryos joined at head

RODENT

44. Antibody labelling of cultured nerve cell (yellow) growing on a section of nerve (green)
45. Regenerating peripheral nerve (Cajal; 1890)
46. Stained skeletal elements in a mouse embryo
47. Stained neuron growing on stripes in culture
48. Pattern of transcription factor-gene expression in a mouse embryo
49. Dye-stained Purkinje neuron
50. Neuron and blood vessels in retina

HUMAN

Borders

51. Nerve fibre outgrowth in explant culture in response to Nerve Growth Factor
52. Crystal structure of Nerve Growth Factor protein
53. Homunculus; a preformed embryo within the sperm, as perceived by Hartsoeker (1694)

Centre

54. Structure of the adult nervous system showing its central and peripheral components

Image & text courtesy of Jim Cohen

BSDB Newsletter

Winter 2000 No. 42

Editorial

Chaos reigns on the roads, rivers and railways here in Britain, in a wet and dismal November. Suddenly you realise how important the travel and communications networks are (and what it means to have dry feet).

It seems that we are doomed to have a chaotic communications network in the BSDB as well. The call for **e-mail addresses** in the last issue (No. 41) was a **dismal failure**. About 100 people (out of 1320) replied.

This issue is so important that the whip is now out. **Regardless** of whether you want the Newsletter sent by e-mail, **we badly need your e-mail address**. Please, please, send your address to Ivor Mason (BSDB@kcl.ac.uk) before we are forced to take more **drastic measures**. Quite apart from easing our administrative tasks, being able to communicate by e-mail with our membership will enable us, for example, to more rapidly inform you about meetings and special offers, without waiting until the next Newsletter is published.

I am pleased to say that we have achieved more success in satisfying your demands for a **cheaper Spring Meeting**. In spite of the fact that we have a stellar international cast of speakers coming to Sussex in April (see page 6), we have managed to reduce the meeting fees to almost half those last time. And, in keeping with the drive to drag the BSDB kicking and screaming into the 21st Century, we have also tried to simplify and streamline the registration and abstract process, which is now entirely web-based (see page 7 for details).

The issue of the format of the Spring Meeting is a constant source of debate. An **alternative format** is suggested in the Chairman's Letter and the Committee invites you to express your views on this, and other ideas, at the **AGM** in Sussex in April (or write to the Newsletter).

Still on the subject of the Spring Meeting, don't miss the **Cool Pics Image Competition** sponsored by the Wellcome Trust. Bring your images to Sussex and maybe get a prize. See page 4 for details.

Also new this issue, the **Jobs in development** section. If you need one, check this out.

Finally, please take advantage of the Book & Journal offers to BSDB members. New this issue are **special discounts** on **Current Biology, Current Opinion and Trends Journals,** and **Development, Genes & Evolution** subscriptions. See page 15.

More Newsletter contributions please. Send to me, Andy Furley, at a.j.furley@sheffield.ac.uk

The Editor

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BSDB/BSCB Joint Spring Meeting 2001

Cell & Tissue Morphogenesis

Sussex, 3rd - 6th April

The **Programme** & details of the meeting appear on **pages 6 & 7.** Registration and Abstract Submission are **online**:

www.meetings-secretariat.com/

Registration and Abstract Deadline 16th February 2001

News

BSDB Committee changes

Stability marks the moment, something to be envied by the British travelling public, but two retirements are on the horizon. Nominations are invited to replace Paul Scotting and Alison Wilkie (**Graduate Student Representative**), who both retire in September, 2001. **Please send you suggestions to Ivor Mason by 30th March, in time for the AGM** at the Spring Meeting in Brighton. Nominations require the support of two members

BSDB Student Member wins Elsevier Brain Research Prize

Yi-Chuan Cheng, a graduate student member of the BSDB from Paul Scotting's lab in Nottingham, has been selected by the Elsevier Brain Research Journals as one of four international BRI Young Investigators of 2000. Unfortunately, due to short notice, Cheng was not able to attend the award ceremony in New Orleans, but hopes to collect his prize (a certificate and $3,000) at a UK meeting later this year. This award results from his publication describing analysis of the gene, cSox10. Martin Cheung and Muhammad M. Abu-ElMagd, co-authors on the paper, are also gradute student members of the BSDB. *(Let's have more like this please. Ed.)*

E-mail address update failure

The effort to streamline our communications by getting e-mail addresses from all members has so far proved to be a dismal failure. Please, please spare a minute between chat rooms to drop Ivor (BSDB@kcl.ac.uk) a line with your e-mail address, before we have to get nasty.

NASA Developmental Biology Workshop

Ever wondered whether dorsal would be dorsal in zero gravity? The first elements of the **International Space Station** (ISS) have now been assembled and full research capability is expected within the decade. It will be equipped with hardware to support several different kinds of developing animals, will provide long term exposure to microgravity and will include centrifuges to provide control environments. It is expected that the ISS will facilitate well-designed, well-controlled studies that will be of interest to the developmental biology research community.

In order to discuss the possibilities, a workshop, imaginatively entitled "The Developmental Biology Workshop", was recently convened and organized by Dr. Sally A. Moody, George Washington University and Dr. Catherine Golden, NASA. The workshop discussed the value of space-based life science research and possible future directions and priorities A detailed report of this meeting and the recommendations of the participants may be found at:
www.fundamentalbiology.arc.nasa.gov/ISLSWG_index.html *(see also Moody & Golden, 2000. Developmental Biology 228: 1-5)*

Resources for Biology Teaching

For many of us teaching is a burden with which we have to live. Like it or not, however, aside from its obvious role in breathing life into the next generation of biologists, it is one of the most important ways in which we communicate our work and its goals and implications to the rest of society. As identified by our Chairman in the last issue (No. 41), this has to be one of our most important goals in these first years of the new millenium, and so it is heartening to see that there are new resources at hand.

The Learning and Teaching Support Network is a recently established programme set up within the context of the increased prominence given to learning and teaching in HE and FE institutions. The remit of each LTSN Subject Centre (there are 24 of them) is to:

- act as a repository for information on all aspects of teaching, learning and assessment;
- collect and disseminate examples of innovation and good practice in teaching, learning and assessment;
- promote and support innovation and developments in teaching and learning;
- facilitate a communication network between teachers in the subject area.

The **LTSN Centre for Bioscience** has committed funding from the HE funding bodies for 5 years initially (£270K per year) plus contributions to costs from the University of Leeds, where the centre is located, and from the University of Aberdeen. Professor Ed Wood and Professor Ian Hughes are Director and Co-Director respectively.

The Centre covers the Biosciences from Cellular and Molecular Biology through to Agriculture and Food Science. However, the Centre has three Subject Specialists whose roles are to act as discipline-specific contacts. **The biology subject specialists Dr. Heather Sears & Dr Yolande Knight.**
The Centre will act as a repository for information on all aspects of teaching, learning and assessment and will arrange conferences and workshops, maintain discussion lists and a helpline, publish a bulletin and provide small grants to foster development of innovative approaches to teaching and learning. The Centre also aims to work closely with the **learned societies** and their education sub-committees (***What education sub-committee? Is this something we need? Ed.***) to promote subject-specific developments and to target specific areas, such as Problem Based Learning, as being of particular significance and broad application. An on-line information service (http://bio.ltsn.ac.uk) is under development to provide rapid access to evaluated information on a wide range of learning, teaching and assessment strategies and methods.

The LTSN Centre for Bioscience is intended to act as a focal point for the large community of Bioscience academics distributed across UK HE and FE institutions. To achieve this, we are establishing a network of Departmental Contacts to provide a two-way flow of information and ensure that everyone has a voice in the development and focus of the Centre. Your experiences and ideas for the development of the Centre are essential and **we look forward to receiving your input and views.** To contact the Centre, please ring 0113 233 3001 or email ltsnbioscience@bmb.leeds.ac.uk. Our Website is http://bio.ltsn.ac.uk

News, Letters and Comments to the Editor
a.j.furley@sheffield.ac.uk

From the Chairman

BSDB Meetings have rightly achieved a reputation for being amongst the best and friendliest in the ever expanding international conference calendar, always attracting outstanding speakers as well as large numbers of delegates. But there is always room for improvement and a number of interesting suggestions emerged during a lively debate on this topic at the Annual General Meeting in Warwick earlier this year. One view voiced repeatedly was that Spring Meetings should become broader in scope, with more opportunity for late breaking results to be presented, especially by younger investigators. The committee has considered this suggestion very carefully and has come up with the following proposal that will be discussed at the next AGM. Instead of focussing on a single topic, as has been the accepted format for more than a decade, the plan would be to have a number of sessions with different themes, each of which would be chaired by a recognised leader in the relevant field. This individual would have responsibility for inviting two other international stars and in addition, selecting a further three or four speakers from amongst those submitting abstracts. In this way, we would encourage oral presentations from younger investigators, but to preserve the international character of the meetings a 2:1 foreign to UK speaker ratio rule would be applied to the selection process.

Another concern raised at the AGM was the seemingly inexorable increase in the cost of attending our meetings. In this matter we are to some extent at the mercy of the meeting venues: conference organisation is big business for Universities these days and we have to pay the market rate. Nevertheless we are trying hard to keep costs down by more efficient administration and increasing the levels of commercial sponsorship. We do, of course, continue to benefit form the generosity of the Company of Biologists and I am pleased to announce that we received an additional grant of £10,000 form the Company earlier this year. This will enable us to offer more awards to graduate students wishing to attend the Spring or Autumn meetings.

In the last issue I wrote about finding ways through which we could inform and educate the public about the potential utility and benefits of the research in which we are all engaged. I am pleased to say that we are now entering into discussions with local schools in the Brighton area with a view to holding a half day open session at the end of next year's Spring Symposium. The idea will be to invite year 10 (Key stage 4) pupils to hear presentations from two or three of our speakers: Paul Martin has already agreed to give one of the talks and we are confident of securing the services of two other speakers with similar charisma! Although this is aimed at school students, I am sure that they would appreciate the opportunity to mingle with professionals, so please feel free to attend this event.

Phil Ingham

We want to hear your views on these and other issues. **Please come and tell us what you think at the AGM** at the Spring Meeting at Sussex University in April, or write to the Newsletter (a.j.furley@sheffield.ac.uk)

COOL PICS WANTED

The Wellcome Trust Photo Library, as part of its continuing drive to acquire new and exciting images to add to its collection, is **offering a prize of £100 for the best image at the Sussex meeting in April and £50 for the runner up**.

Any post-doc or PhD student, or even lab head who has an image (could be a shot of a whole embryo or a stunning confocal or EM shot, or whatever) which is either aesthetically gorgeous or tells a cool scientific tale (or both) should **bring it to Sussex** for entry into the "Cool Pics" competition.

You should provide both a print for display and the original (either the slide or digital file). It would be really good if you could also bring a brief description of the image content.

Jenny Whiting from the Wellcome Trust Photo Library will be at the meeting and will judge the images. She will also be selecting images for the library from all entries submitted so bring as much as you can!.

The Photo Library provides images to both the academic community and the media and any pictures used commercially will earn royalties. You do need to be the copyright holder of the images to contribute them to the library which unfortunately means no published images (similar ones are OK though).

Contact Jenny Whiting on
j.whiting@wellcome.ac.uk
or on 0207 611 8347 for more info.

From the Treasurer

TRAVEL GRANTS
Thanks to the continued generous support of the Company of Biologists, 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
** **1996** "Student-rate" members should quickly upgrade their subscription to **£20 or they will be culled (humanely).**

Ottoline Leyser

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. The BSDB offers very generous travel grants and students in particular should take advantage of their membership while it lasts! The BSDB is far more generous than other societies in this respect! ***(Please note that Alison retires in Sept 2001. Nominations for her replacement should be sent to Ivor (ivor.mason@kcl.ac.uk) by 30th March, in time for the AGM at Brighton in April. Ed.)***

Essential Reading...

for the Developmental Biologist

Regulatory Processes in Development

Edited by L Olsson, Uppsala University, Sweden and K-O Jacobson The Royal Swedish Academy of Sciences Stockholm, Sweden

1 85578 136 0 Hardback September 2000 210 pages £75.00

Sven Hörstadius was one of the great experimental biologists of the 20th century. His experiments on sea urchin larvae and his thorough analysis of the neural crest (and its importance for head development) have had a profound influence on many areas of modern developmental biology.

In 1998, leading researchers working in the field pioneered by Hörstadius celebrated the centennial of his birth by holding a symposium in his honour. Arising from that meeting, this book gives an overview of the present state of two of the fields in which Hörstadius was most influential — echinoderm embryology and vertebrate head development — as well as encompassing other areas.

To address future prospects for experimental embryology, the symposium focused on new developments in the fields that were central to the approach of Hörstadius. Induction and pattern formation are old concepts that are now being redefined in molecular terms. The genetic control of development was beyond the grasp of Hörstadius, but is now being discovered at a breathtaking pace. The new relationship between evolution and development is explored by several authors.

The current excitement about developmental biology is felt throughout this volume, as the authors describe breakthroughs in our understanding of basic developmental processes and mechanisms. The book will be of great interest to researchers and graduate students in cell and developmental biology as well as to zoologists and evolutionary biologists.

Extracellular Regulators of Differentiation and Development

Edited by KE Chapman, University of Edinburgh; SP Jackson, Wellcome/CRC Institute, Cambridge; D Wilkinson, Laboratory of Developmental Neurobiology, NIMR, London, and GG Lunt, University of Bath

1 85578 070 4 Hardback 1996 192 pages £65.00

Extracellular Regulators of Differentiation and Development pulls together works from a number of world experts in the general field of controlling cell function by extracellular regulators. It covers all aspects of this important and complicated field ranging from receptors for regulators at the cell surface, to effectors of the response in the cell nucleus.

Leading experts in the field summarize recent advances in the diverse biological systems that have provided insight into the biological mechanisms of developmental processes.

This book will be of interest to lecturers, PhD students, postdoctoral fellows and final-year undergraduates studying the subjects of biochemistry, pharmacology, gene regulation, molecular genetics and developmental biology.

Mammary Development and Cancer

Edited by PS Rudland; D Fernig and SJ Leinster, University of Liverpool

1 85578 087 9 Hardback 1997 336 pages £65.00

This book is concerned with how the mammary gland grows and differentiates at the molecular level under the influences of circulating hormones, and locally produced growth factors, also how this molecular machinery can be either utilised by man for product production or subverted by nature in the formation of cancer.

The contents and approach of the book are written from a developmental outlook by international authorities in the field.

The book is divided into five sections each reflecting an area of current intensive research:

- control of mammary development
- regulation of milk production
- mammary transgenics
- genetic changes in mammary cancer
- mechanisms of mammary metastasis.

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Next BSDB Meeting

BSCB/BSDB Joint Spring Meeting, April, 3rd-6th, 2001

Cell & Tissue Morphogenesis

University of Sussex, Brighton, UK

Organisers: Charles ffrench-Constant, Andy Furley, David Garrod, Alan Hall & David Wilkinson

Wednesday, 4th April

Session 1:	***Junctions*** ***Chair: David Garrod***
E Dejana (Milan)	Intercellular junctions in endothelial cells and their role in modulating cell growth and apoptosis
T Uemura (Kyoto)	Control of single-cell patterning by the seven-pass transmembrane cadherin
P Bryant (Irvine)	Organizers of signaling pathways at cell junctions
Selected Abstract	To be announced
E Peles (Rehovot)	Cellular junctions of myelinated nerves
Selected Abstract	To be announced
E. Knust (Dusseldorf)	Protein scaffolds and cell polarity in Drosophila
B Gumbiner (New York)	Cadherin regulation in tissue morphogenesis

Lunch/Posters

Session 2	***Morphogenesis*** ***Chair: David Wilkinson***
D Wilkinson (London)	Control of cell movement during hindbrain patterning
K Basler (Zurich)	Genetic control of cell segregation at compartment boundaries
M Krasnow (Stanford)	Oxygen response pathways and airway branching in Drosophila
A Chisholm (Santa Cruz)	Cell signalling in C. elegans neural and epidermal morphogenesis
J Hardin (Madison)	Regulation of epithelial cell migration and adhesion in C. elegans

BSCB Hooke Medal Lecture

Reception/Posters/Dinner

Thursday, 5th April

Session 3:	***Migration & Connection*** ***Chair: Andrew Furley***
N Brown (Cambridge)	Genetic dissection of integrin functions in morphogenesis
D Van Vactor (Harvard)	Mechanisms that Control Axon Guidance in the Drosophila Embryo
G Rougon (Marseille)	Cross-talk between IgCAM and semaphorin signalling in the formation and plasticity of neuronal networks
Selected Abstract	To be announced
L Zipursky (LA)	Molecular Genetic Dissection of Axon Guidance and Targeting in Drosophila
Selected Abstract	To be announced
Y Jin (Santa Cruz)	A genetic study of synaptogenesis in C.elegans neuromuscular junctions
D Colman (New York)	The Synaptic Junction in the CNS: Evolution, Architecture and Plasticity of an Adhesive Device

Lunch/posters

Session 4:	***Cytoskeleton*** ***Chair: Charles ffrench-Constant***
P Martin (London)	Epithelial sealing in morphogenesis and repair
Selected Abstract	To be announced
G Borisy (Madison)	Actin machinery for cell protrusion
Selected Abstract	To be announced
D Kiehart (Duke)	A molecular and genetic analysis of morphogenesis: how does an embryo close a hole
A Hall (London)	The control of cell migration by Rho GTPases

BSDB Waddington Medal Lecture

BSCB and BSDB Annual General Meetings
Conference Dinner

Continued over

Next BSDB Meeting

Friday, 6th April

Session 5:	***Signalling*** ***Chair: Alan Hall***
M Peifer (Chapel Hill)	Cell adhesion, signal transduction and cancer: the Armadillo connection
A Harwood (London)	Intercellular junctions and cell signalling in Dictyostelium
M Ginsberg (La Jolla)	The inside story on integrins
F Giancotti (New York)	To be announced
F Watt (London)	Role of cell adhesion in regulating epidermal stem cell fate
S Dedhar (Vancouver)	Integrin Linked Kinase(ILK) mediated regulation of Epithelial-mesenchymal transformation.
R Hynes (MIT)	Cell Adhesion in Cancer

Special Session 6: Public Awareness of Developmental Biology

A chance for pupils from local schools to hear selected speakers from the meeting present their work.

Workshops

Wednesday, 3rd April (Concurrent with Sessions 1 & 2)

I: "Regulation of Cell Motility" Chair: Laura Machesky

Dave Knecht (Storrs)
Frank Gertler (MIT)
Sutherland Maciver (Edinburgh)
Cornelis Weijer (Dundee)
Harry Mellor (Bristol)
Britta Qualmann (Magdeburg)

Meeting Website
http://www.meetings-secretariat.com/
Live from 1st December, 2000

Thursday, 4th April (Concurrent with Sessions 3 & 4)

II: "Biogenesis of Post-Golgi Organelles in Health and Disease" Chair: Dan Cutler

Reg Kelly (UCSF)
Juan Bonifacino (Bethesda)
Scottie Robinson (Cambridge)
Gillian Griffiths (Oxford)
Sharon Tooze (London)

Abstract and Registration deadline: 16 February 2001

GENERAL INFORMATION SHEET

Dates
Arrive Tuesday 3 April in time for reception & dinner (1830); depart Friday 6 April afternoon.

Conference site:
The conference will be held on the University of Sussex campus. Full details of travel to the University of Sussex and further instructions about the conference and site will be sent to registrants approximately 4 weeks before the conference.

Registration
You can either register online (see Abstract Submission) or by downloading a PDF registration form on the web and sending it completed to the Meeting Secretariat.

The number of registrants is limited. In the event that the meeting is oversubscribed, priority will be given to those who present posters. The **deadline for registration forms is 16 February 2001**; those registering after this date are subject to a strictly enforced late registration penalty of **£30.**

Posters and Abstracts
There will be joint poster sessions between BSDB and BSCB.
Please note that poster authors should state clearly when submitting their poster their status (e.g. PhD student, post-doc, lab head, etc.), and whether the poster is to be entered into the poster competition (not lab heads), or to be considered for a short oral presentation (open to all).

Abstract Submission
Abstracts must be submitted online at the meeting website
Abstract deadline:
16th February, 2001.

Meeting Charges
The fee for residents covers registration, accommodation and all meals for the duration of the conference, excluding the Conference Dinner. The fee for non-residents covers registration, teas, coffees and lunches each day.

Charges (details on website)

2 nights full member	**£140**
2 nights student member	**£115**
3 nights full member	**£175**
3 nights student member	**£150**
non-residents (per day)	**£50**
Late booking add	**£30.00**
Non-members add	**£35.00** to fee

Travel Grants
Remember that BSDB travel grants are available to cover basic travel and conference expenses. **See Page 5.**

Further details about the meeting can be found on the meeting website (live from 1st December):
http://www.meetings-secretariat.com/

For queries, please contact:
The Meetings Secretariat
The Biochemical Society
59 Portland Place
London W1B 1QW
UK
Tel: +44 (0) 20 7580 3481
Fax: +44 (0) 20 7637 7626
E-mail:
meetings@biochemistry.org

Future BSDB Meetings

Autumn Meeting — Magdalen College, Oxford

Boundaries in Development

19th-21st September, 2001 — *Organiser: Marcel van den Heuvel*

The meeting is intended to give the participants an overview of the work on the existence and roles of boundaries in development. We will consider both the traditional view of boundaries existing between groups of cells (ie segmental or clonal divisions), and the possibility that such boundaries exist within single cells. Sessions thus float to represent various model systems as well as discuss the latest developments in the genetic and molecular analysis of characterised boundaries.

More information will be available soon on the following www address
http://anat.ox.ac.uk/MRCFGU/MvdH/autumnBSDB2001
and in the Spring Newsletter.

Invited and confirmed speakers include:

Alex Joyner (Skirball, NY)
Antonio Garcia-Bellido (Madrid)
David Wilkinson (London)
Jean-Paul Vincent (London)
Julie Ahringer (Cambridge)
Andrea Wizenmann (Wuerzburg)
Ken Irvine (Rutgers, NJ)
Paul Nurse (London)
Steve Cohen (EMBL)
Steve Wilson (London)
Gerd Juergens (Tuebingen)

Evolution & Development — Spring 2002

Joint with Genetical Society — University of York

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)

University of Sussex, 19-21 December 2000

The Glycobiology of Development

Glycobiology Group/British Society for Developmental Biology Colloquium
Organisers: John Aplin (Manchester) & Jamie Davies (Edinburgh)

Wednesday 20 December 2000

Chair: Jamie Davies (Edinburgh)

09:05-09:45 **Norbert Perrimon** (Boston)
Roles of Heparan Sulfate Proteglycans in Drosophila

09:45-10:25 **Val Wilson** (Edinburgh)
Mouse 2 o-sulphotransferase and kidney development

10:25-11:05 **Cathy Merry** (Manchester)
Structure and bioactivity of heparan sulphate from the 2-O-sulphotransferase mutant mouse

11:45-12:45 Sir Frederick Gowland Hopkins Memorial Lecture
John Sulston (Cambridge)
Society and the human genome

14:20-15:00 **John Aplin** (Manchester)
MUC1, glycans and the cell surface barrier to embryo implantation in human

15:00-15:40 **Susan J Kimber** (Manchester)
Glycosylation changes during differentiation of the mouse uterine epithelium for implantation of the embryo

15:40-16:20 **Kermit L Carraway** (Miami)
Regulation of Muc4 in the rat female reproductive tract: Implications for blastocyst implantation

17:00-18:30 Poster Session

Thursday 21 December 2000

Chair: John Aplin (Manchester)

09:10-09:50 **Ian Nieduszynski** (Lancaster)
The role of keratan sulphate chains in the maintenance of corneal transparency

09:50-10:30 **Jamey Marth** (San Diego)
Modeling Human Genetic Disease due to Aberrant Protein Glycosylation: Developmental and Physiologic Abnormalities in the Absence of the Mgat2 Gene

10:30-11:50 Poster Session

11:55-12:35 **Jamie Davies** (Edinburgh)
Glycosaminoglycans in mammalian organogenesis

12:35-13:15 **John K Heath** (Birmingham, UK)
FGF's and FGF receptors in early mouse development

14:50-15:30 **Don Moerman** (Vancouver)
C elegans perlecan

15:30-16:10 **Scott Selleck** (Arizona)
Proteoglycans in developmental patterning: from growth control to synapse assembly

16:10-16:50 **Jeremy Turnbull** (Birmingham, UK)
Heparan sulphate in mouse neural development

Further details can be found on the meeting website:
http://www.biochemistry.org/meetings/programme.cfm?meetno=672#3-1

IMPORTANT ADDITIONAL INFORMATION - BSDB members should register as if they were Biochemistry Society members (ie at the reduced price), but when completing the form they should make clear that they are from the BSDB.

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EMBO WORLD PROGRAMME
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For information contact:
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Book Reviews

Development, function and evolution of teeth.

Edited by Mark F. Tearford, Moya Meredith Smith and Mark W.J. Ferguson.
Published 20/06/00
Price £65

This book is aptly named. If you are interested in finding out about the development, function and evolution of teeth then this is a very good place to start. The book itself consist of over 21 chapters, divided into 4 section, each of which has been authored by experts in the field. The first section of the book – Genes, molecules and tooth initiation – deals with the developmental events that underlie the formation of the teeth, and it is these chapters that are likely to be of the most interest to Developmental Biologists. For example, Paul Sharpe reviews recent work on the molecules that direct early tooth development, while Jukka Jernval and Irma Thesleff, discuss the importance of the enamel knot in the development of tooth shape. The remaining chapters, however, concern themselves with issues which are less likely to be of interest to the average BSDB member. That isn't to say that the chapters here are not of interest. I found those dealing with the evolutionary aspects particularly informative. Rather, its more that the majority of chapters in this book, and indeed the book itself, are for those more intimately involved in Dental researchers per se. I must say that I wouldn't necessarily run out and buy this book for the lab, but it would be a very worthwhile addition to any library.

Anthony Graham

Photography with a Microscope

By F.W.D. Rost & R.J. Oldfield
Cambridge University Press
ISBN 0 521 77096 3 (Hardback) £55

The modern compound research microscope can be a daunting piece of equipment to the novice. Even the experienced user, faced with the task of choosing a new microscope, is confronted with a bewildering choice of components – even from a single manufacturer. This book guides each user in a simple and straightforward manner – introducing both the basic features that belong to all microscopes and camera systems as well as illustrating the variety of different options available and their multiple applications.

Introductory chapters give the reader a good grounding in microscopy and photography, and enough knowledge to start taking photomicrographs. They are intended to be read with a microscope in front of you – and thus form very useful guide for students and first-time users, who can work through each section as a tutorial.

Later chapters turn to individual applications in more detail. This leads to extensive repetition, the only annoying feature of the book. A chapter is devoted to each of darkground microscopy, polarisation, phase contrast and DIC, fluorescence microscopy, stereomicroscopy, and (to me) the less well-known techniques of infrared and ultraviolet microscopy. A further section of the book is devoted to photography: camera systems, exposure measurement, and advanced photomicrography. Throughout, there are useful summaries and checklists: setting up Köhler illumination, using the fluorescence microscope, taking black-and-white or colour photographs etc. There are also very helpful photographs of the actual equipment: comparisons of different objectives, condenser units and lamp bulbs, for example.

The actual optical theory of the microscope is not covered in any detail; the book does not blind you with physics. It is full, however, of simple light-path diagrams that provide lucid explanations (no pun intended) of, for example, spherical and chromatic aberration, infinity correction, and the all-important need to set your condenser aperture diaphragm correctly. There are many useful pictures to illustrate right and wrong settings, which are particularly informative: for example, the use of filters to correct for colour temperature, the effects of spherical and chromatic aberration, or the effects of varying numerical aperture.

The authors clearly have a strong interest in aesthetics, but I found some of their suggestions too subjective: choosing to photograph an odd rather than an even number of things, for example. Numerous references to one author's individual preferences or recommendations gave the impression that these were not endorsed by the other; you can almost imagine them arguing, as they wrote, over the finer points of different recipes for developer, or whether stereo pairs are really any use at all.

The actual photomicrographs in the book, used to illustrate various points, range from stunning to rather ordinary. A particularly poor example, I felt, was chosen to illustrate confocal microscopy, giving the reader no indication of the true power of the technique. While the authors state that a comprehensive coverage of confocal microscopy and digital imaging is beyond the scope of the book, it is perhaps a pity that the taste they give is so disappointing.

For the student, there are helpful suggestions throughout on good working practice, acquisition, care, storage and presentation of

data (including a useful section on poster making). For real afficionados, there are also useful reference tables, of colour temperature values and conversion filters, exposure compensation factors, etc.

Appendices to the book include sections on care and maintenance of equipment, trouble-shooting, and a quiz (with answers) to test your knowledge. So, if you are confused as to what a circle of confusion is, or want to know when you should oil-immerse your condenser, or just want to check once again what the difference really *is* between depth of field and depth of focus, dip into this book. The index is comprehensive and well-organised.

With the advent of digital imaging and presentation, I suspect that the photography sections of the book will rapidly lose their relevance; in places they already appear old-fashioned. The microscopy sections, however, will endure. Even the most modern of research compound microscopes, after all, still uses Köhler illumination and follows a uniform basic optical design. In the words of the authors, "good photomicrography is nine-tenths good microscopy and one-tenth good photography"; this book should continue to be relevant to that crucial nine-tenths well into the future. If, like "co-author Fred", you have "a special interest in the photography of small objects" (and as developmental biologists, don't we all?), I would recommend this book to you. It will be a useful addition to any library or to the shelf of a microscope room.

Tanya Whitfield

Dying to Live: How our Bodies Fight Disease

By Marion D. Kendall
Cambridge University Press
ISBN 0 521 58479 5 (hardback) £17.95

How our bodies fight disease is a vast and fascinating subject. Nevertheless, in "Dying to Live", Marion Kendall has managed to present the many levels of complexity involved in this subject in a popular science format.

The underlying premise of "Dying to Live" is that death, at the cellular level, is often necessary in order for survival of the individual. The book is divided into three parts according to the three "R's": Recognition, Reaction and Recovery. Within the first three chapters that comprise Part 1, we are introduced to the various molecular and cellular characters that will reappear throughout the subsequent chapters. Chapters 5 and 6 describe the various levels at which the body fights off disease, and Chapter 7 describes the main enemies in more detail. Although mainly involved with the discussion of recovery after disease, Part 3 also considers those diseases where the normal defence system is less successful, such as AIDS and cancer.

"Dying to Live" is written in a fluid style and I particularly enjoyed the introduction to each chapter, which comprises of a short but detailed discussion of the causes and socio-economic impact of a given disease that is relevant to the topic described within that chapter. For instance, Chapter 3, examining the development of the immune system is preceded by a paragraph describing allergies. An allergy is thought to develop through the exposure of an individual to allergens early in the development of the immune system, through food sources for example.

Immunology is an extremely complicated subject. It is similar to say, pharmacology, in that it appears so daunting to the outside observer that many simply fall at the first hurdle when first introduced to it. However, Kendall has managed to strip out much of the complexity of immunology, without compromising the content, making "Dying to Live" a very readable popular science book.

Anthony Isles

Haematopoietic and Lymphoid Cell Culture

Eds: Margaret Dallman & Jonathan Lamb,
Cambridge University Press
ISBN 0-521-62969-1 (paperback) $31.95

Cambridge University Press has just published a new book of the series of Handbooks in Practical Animal Cell Biology dedicated to cell culture of haematopoietic and lymphoid cells. The contributors are leaders on their fields and reading the book one gets the feeling that the methods described are performed on the daily basis in their laboratories. Chapters are well organized with a brief introduction on the cell type discussed and its characteristics in human and mouse, followed by protocols for isolating and expanding them *in vitro* and finally, a section on possible applications including FACS analysis, gene expression or staining procedures.

Chapter 1 is dedicated to haemopoietic differentiation of embryonic stem cells. It contains a very detail report on different methods to generate undifferentiated ES cell aggregates. Several detailed protocols are provided for the production of embryoid bodies. The final part of this chapter describes the analysis of the differentiated cell progeny by flow cytometry, histology, gene expression or analysis of colony forming potential and re-implantation in recipient animals. Chapter

2 is focussed on the growth of Dendritic cells (DC), a very important contribution to the active field of dendritic cell biology. Following a well-documented introduction on DC, the authors introduced a variety of techniques to generate mouse and human DC in large numbers -from bone marrow or peripheral blood- for immunobiological studies and evaluation of migratory properties. Methods for labelling DC with either Tc-99m or the fluorochrome CFDASE to study cell migration *in vivo* are described. The latter procedure has the advantages of not using radioactive material and being suitable for co-localization studies of labelled cells by UV microscopy. Additional protocols described in this chapter include chemotaxis assays using the transwell system and a transendothelial migration assay for human DC.

Chapter 3 is dedicated to murine thymic explant cultures, a very powerful system to study thymocyte development from the early stages to their final differentiation *in vitro*. The introduction on T cell differentiation emphasizes the importance of thymic stromal cells and their interactions with thymocytes during T cell development, and is followed by a detail method on fetal thymic organ cultures (FTOC). In addition, a broad collection of protocols is described, encompassing isolation of thymic rudiments and newborn thymic organ culture, preparation of thymic stromal and cortical epithelial cells, immunomagnetic separation of stromal and lymphoid cells to re-aggregate thymus organ cultures. Finally, a protocol to characterize the cells by flow cytometric analysis is provided.

Chapter 4 has T cells as protagonists. The introduction discusses the growth factors required for T cell culture as well as the conditions to establish T cell lines and clones. In addition, it describes methods to generate human and mouse T cell clones and their maintenance. This chapter also presents a method for expansion of human T cells and for generation of cloned T cell lines by either limiting dilution, cell sorting or micromanipulation. While the authors recommend the use of cell sorting, they also describe protocols to follow and evaluate the efficiency of other methods. B cells take center stage on chapter 5. This section starts with a detailed description on B cell development, the markers of mouse B cell lineages and the two current nomenclatures and a summary on differences between mouse and human B cells. The protocols included in this chapter focus on the isolation of B cell precursors from murine fetal liver, spleen, peritoneal cavity and human bone marrow. The use of primary stromal cells or cell lines to support B cell development and proliferation are discussed. The final part presents guidelines for flow cytometric analysis of B lymphocyte populations including intracellular staining, cell cycle progression and apoptosis and a brief report of two methods of genetic manipulation of developing B cells.

Monocytes and macrophages are the distinguished guests of chapter 6. An introduction on macrophage biology is followed by protocols for isolation and culture of human macrophages. Several techniques are presented to isolate and culture mouse macrophages from diverse sources and to induce elicited macrophages. Applications such as immunohistochemistry and gene expression analysis are also described. NK and LAK cells are under scrutiny in chapter 7. Purification of these cell types from mouse and human as well as their cell surface markers are listed. The specific cytokines required for the *in vitro* growth of these cells and their culture conditions are discussed. Basophils and mast cells are the cells under study in the final chapter. Protocols on culture conditions of human mast cells from mononuclear cells or $CD34^+$ progenitors are presented. Isolation and culture conditions of mouse cells are also illustrated. The end of this chapter contains techniques for enzymatic and metachromatic staining of antigens and granules in these cell types.

Few things could be added to this book. Among them a protocol to culture lymphoid DC and an index of existing cell lines for each cell type. Overall this book will be of great value for molecular biologists in need to validate their *in vitro* findings using tissue culture systems. It will also be very useful to more experienced cell biologists. The contributors have put great care in explaining the protocols in detail, and some chapters even include brief troubleshooting sections.

Altogether for anyone looking for the right conditions for tissue culture of haemopoietic progenitors and lymphoid cells, this is "the book".

Jorge Caamaño

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Applied Molecular Genetics

ROGER L. MIESFELD, University of Arizona, USA

Explains the key biochemical and cell biological principles behind some of today's most commonly used applications of molecular genetics, using clear terms and well-illustrated flow schemes.

The book is divided into three sections and moves from basic to advanced topics while providing a concise overview of fundamental concepts in biotechnology. Each chapter concludes with a Laboratory Practicum describing a hypothetical research objective, and the sequence of steps that are most often used to investigate biological questions using molecular genetic methods. In addition, the book presents informative summaries of the latest developments in applied molecular genetics, and each chapter section includes a complete bibliography with landmark publications identified.

This is a must-have guide for all instructors and students in the fields of modern biochemistry, cell biology, and genetics. *Applied Molecular Genetics* is also an ideal reference for anyone needing a clear, concise source of up-to-date information on this rapidly changing field.

0471 15676 0 293 pp April 1999 (Pbk) £32.50

Cell and Tissue Culture for Medical Research

Edited by A. DOYLE, The Wellcome Trust, London, UK and J. BRYAN GRIFFITHS, Scientific Consultancy and Publishing, Porton, Salisbury, UK

A vital collection of fundamental, applied procedures in cell and tissue culture currently forming the basis of the new medical techniques of tissue engineering and gene therapy. The combination of detailed laboratory procedures and informative overviews aids both laboratory work and the implementation of new lines of investigation.

Doyle presents a great deal of revised and new material that is essential for keeping the field at your finger tips.

0471 85213 9 468pp April 2000 (Pbk) £65.00

From Genome to Proteome: Advances in the Practice and Application of Proteomics

Edited by M. J. DUNN, Heart Science Centre, Harefield, UK

As research on the human, animal, plant and microbial genomes matures, the need for understanding the proteome has clearly emerged as the next major endeavour of life sciences.

Compiled in this book are reviews and research articles published in *Electrophoresis and Agewandte Chemie* (International Edition) in 1999 which describe the recent advances and perspectives of this new field of research.

Proteomics is a new key for the functional analysis of living systems and of equal importance for basic as well as application oriented research.

3527 30154 2 552 pp November 1999 (Hbk) £140.00

Genomics: The Science and Technology Behind the Human Genome Project

CHARLES R. CANTOR, CASSANDRA L. SMITH, Boston University, USA

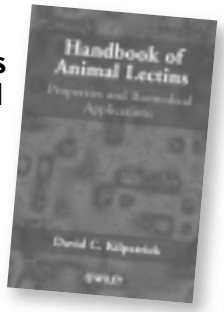
An integral overview of the strategies and technologies behind the Human Genome Project and the field of molecular genetics and biotechnology.

It reviews basic properties of DNA and the chromosomes that package it in cells, describes the three main techniques used in DNA analysis – hybridization, polymerase chain reaction and electrophoresis – and presents a complete exploration of DNA mapping in its many different forms. It also brings the scientific community closer to the ultimate goal of understanding the biological function of DNA by explaining both the theoretical principles and practical foundations of modern molecular genetics to a wide audience.

The topics also include discussions of the developing methods of sequencing, such as by hybridization (SBH) in which data is read through words instead of letters, it details explanations and critical evaluations of the many different types of DNA maps that can be generated – including cytogenic and restriction maps as well as interspecies cell hybrids and gives informed predictions for the future of DNA sequencing

0471 59908 5 624 pp February 1999 (Hbk) £80.95

Handbook of Animal Lectins – Properties and Biomedical Applications



D.C. KILPATRICK, Edinburgh & S.E. Scotland Blood Transfusion Service, UK

Handbook of Animal Lectins is the first single authored book devoted to animal lectins. Split into two main sections the book encompasses all animal sources from unicellular protozoa and slime moulds, through to invertebrates to mammals and birds. The first part of the book introduces animal lectins on both a phylogeneric and structural basis and outlines their major biomedical applications. The second and major part constitutes an alphabetical dictionary listing over 170 lectin entries. Each lectin entry is considered under the following headings: Isolation; Structure; Biological Activities; Tissue and Subcellular Distribution; Possible Functions.

This up-to-date and comprehensive reference book will be indispensable to biochemists, cell biologists, immunologists, oncologists, pharmacologists, medical practitioners and students of medical/biological sciences at all levels.

0471 89981 X 488 pp October 2000 (Hbk) £100.00

For further information, or to place an order, please contact:
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Books Received for Review

- **Molecular Evolution & Adaptive Radiation.**
  Eds. Thomas .J. Givnish & Kenneth J. Systema; Cambridge University Press, 2000, £24.95
- **The Origin of Animal Body Plans: A study in Evolutionary Developmental Biology**
  Wallace Arthur; Cambridge University Press, 2000, £19.95
- **Neuronal Growth Cones: The Molecular Approach to their Behaviour**
  Philip R. Gordon-Weeks; Cambridge University Press, 2000, £55.00
- **Molecular Methods in Developmental Biology: Xenopus and Zebrafish**
  Matthew Guille; Humana Press, 1999, $89.00
- **Molecular Embryology: Methods and Protocols**
  Eds. Paul T. Sharpe & Ivor Mason; Humana Press, 1999, $135
- **Translational Control of Gene Expression**
  Eds. Nahum Sonenberg, John Hershey & Michael Mathews; Cold Spring Harbor Press, 2000, $115
- **The Coiled Spring: How Life Begins**
  Ethan Bier, Cold Spring Harbor Press, 2000, $39
- **Abraham Lincoln's DNA and Other Adventures in Genetics**
  Philip R. Reilly; Cold Spring Harbor Press, $25

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

- **Endocrine Cell Culture.**
  S.Bidey (Ed); Cambridge University Press, 1998, £16.95.
- **Pollen Biotechnology for Crop Production & Improvement *(sic)***
  K.R. Shivanna & V.K. Sawhney; Cambridge University Press, 1997, £17.95

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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 hestitate 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

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National Institute for Medical Research

Post-Doc Vacancies (3 year) at NIMR

Division of Developmental Neurobiology
SPECIFICATION OF NEURONAL SUBTYPE IDENTITY
Dr James Briscoe
Functional studies of the mechanism of Sonic Hedgehog signalling and the specification of neuronal subtype identity in the vertebrate neural tube (see Cell 101, 435-445; Nature 398, 622-627).
Informal enquiries to: Dr James Briscoe; Tel: 020 8959 3666, ext. 2559;
e-mail:jbrisco@nimr.mrc.ac.uk

Division of Developmental Biology
VERTEBRATE LIMB DEVELOPMENT
Dr Malcolm Logan
Functional studies to examine the roles of candidate genes in limb-type specification, using chick and mouse embryos. Related projects concerning the process of limb development and the genesis of congenital limb abnormalities.
Informal enquiries to: Dr Malcolm Logan; Tel: 020 8959 3666 ext. 2001;
e-mail: mlogan@nimr.mrc.ac.uk

FORMATION OF THE LATERAL LINE SENSORY SYSTEM - Dr Qiling Xu
Investigation of the molecular mechanisms regulating cell migration and formation of the lateral line mechanosensory system in fish and frog embryos.
Informal enquiries to: Dr Qiling Xu; Tel: 020 8959 3666 ext. 2253; e-mail:
e-mail: qxu@nimr.mrc.ac.uk

CARDIOGENESIS IN AMPHIBIANS
Dr Tim Mohun
The specification and early differentiation of cardiac tissue in amphibian embryos, studied using a combination of embryological and transgenic approaches.
Informal enquiries to: Dr Tim Mohun; Tel: 020 8913 8621; e-mail:
e-mail: tmohun@nimr.mrc.ac.uk

UNIVERSITY OF SHEFFIELD
Post-Doc Position

Centre for Developmental Genetics
Department of Biomedical Science

A Post-doctoral or Graduate Research Assistantship is available to investigate the role of a winged-helix transcription factor in the co-ordination of cell proliferation and morphogenesis during mammalian development. Experience in vertebrate developmental biology, mouse transgenesis or mutant analysis would be preferable but is not essential as training can be provided. The position is funded by the Wellcome Trust and is available for 1 year in the first instance.

Informal enquiries to v.t.cunliffe@shef.ac.uk

Or see our website:
www.shef.ac.uk/~biomsc/research/dgp.html

UNIVERSITY OF SHEFFIELD
Group Leader positions

Centre for Developmental Genetics
Department of Biomedical Science

CELL AND DEVELOPMENTAL BIOLOGISTS

The Centre is one of the biggest groupings of developmental biologists in the U.K., incorporating the MRC Intercellular Signalling and Cell Patterning Co-operative Group.

As part of our continuing development, we now seek to appoint **two group leaders** at University Lecturer level. We are particularly interested in applicants investigating developmental processes at the sub-cellular level or cell biologists with research interests of relevance to developmental processes (such as protein trafficking, cytoskeleton structure and function). The successful candidates will be expected to establish a strong independent programme of research at an internationally competitive level.

Salaries in the range: £18,731 - £30,967

Application forms may be obtained from: www.shef.ac.uk/jobs/secjobs/apply.html

For further information about the Centre and these appointments visit our Website: www.shef.ac.uk/~biomsc/research/dgp.html

The closing date for receipt of completed applications is **15th December, 2000**

European Union Funded
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Netherlands Institute for Developmental Biology, Utrecht.

Fondazione Centro San Raffaele, Milan.

Centre National de la Recherche Scientifique, Delegation Provence, Marseille.

Wellcome/CRC Institute, Cambridge

Institut Curie, Paris

Centre for Developmental Genetics, University of Sheffield

Successful Applicants will have an opportunity to work in one or more of these Institutes during the tenure of their fellowship.

For information or to apply, e-mail:

- ***Eduardo Boncinelli***, boncine@dibit.hsr.it
- ***Philip Ingham***, P.W.Ingham@sheffield.ac.uk
- ***Tony Durston***, tony@niob.knaw.nl
- ***Steve Kerridge***, kerridge@igpd.univ-mrs.fr
- ***John Gurdon***, j.gurdon@welc.cam.ac.uk -
- ***Jean-Paul Thiery*** jpthiery@curie.fr

Contact Andy Furley for info on how to place a job advertisement here a.j.furley@sheffield.ac.uk