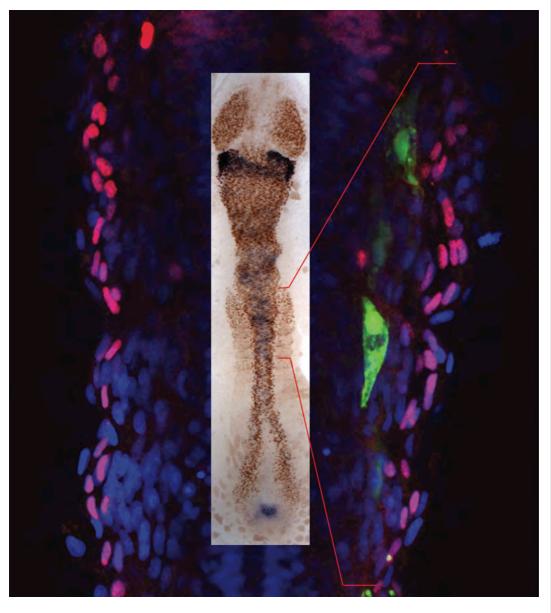


Winter 2007 Vol. 28, No. 2

**British Society for Developmental Biology** 

www.bsdb.org



# **Spring Meeting 2008 in Warwick**

#### Also in this issue:

- Meetings reports: Capri, Athens
- ISDB 2009 in Edinburgh: progress update





### **Editorial**

From the point of view of this newsletter, a major change is that we have a new graduate rep — Gareth Powell. Our outgoing rep. Raphaela Kitson-Pantano, has put student activity high up on BSDB agenda, both in articles in this newsletter and particularly with some very popular events at our Spring meetings, and also by liaising closely with student reps from BSCB and GenSoc. From his contribution to this newsletter, I'm delighted to see that Gareth clearly intends to continue and build on this. His role will be important, particularly in the build-up to ISDB 2009. I hope Raphie has enough energy left to complete her thesis!

A few weeks ago I was all ready to hear James Watson speak in a public debate with Ian Wilmut and David Porteous here in Edinburgh. I had obtained tickets for my children too — something for them to be able to tell their grandchildren, I thought. The title of the joint lecture was "DNA, Dolly and other dangerous ideas". Well they got that right!

What a shame that the event was sabotaged by Watson's provocative comments and the reaction to them. Of course, his comments represent either 'freedom of academic speech' or 'unacceptable debate', depending on one's viewpoint. Whilst trying to avoid getting drawn into the political quagmire, I did try to explain to my son (12) how unfortunate it was that such a brilliant person was in danger of being remembered for infamous reasons. He summed it up much better than I did: "It's just like Zinedine Zidane", he said, shaking his head. There wasn't much left for me to add to that!

Andrew Jarman, Editor andrew.jarman@ed.ac.uk

#### Help us spread the word

Please print out a copy of this newsletter and leave it in a strategic place, such as your coffee room or staff room.

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#### Cover image

Pax3/7 proteins (brown) in neural tube. neural crest and somite of the zebrafish embryo (inset, dual stained for foxd3 mRNA in blue) show broad staining in nascent somites and strong dorsal staining in neurectoderm. In a magnified 23 somite stage embryo (main image), Pax 3/7 protein (red) is restricted to somite nuclei (blue) in dermomyotome superficial to migrating slow muscle fibres (green). Photos by James E. MInchin, Jana Koth and Simon M. Hughes, King's College London.



### From the Chairman



In the pioneering spirit of the BSDB, our recent autumn meeting. Systems Approaches to Development, was one of the first in a brand new and excellent venue – The Edge – at the University of Sheffield. The science ranged from molecules to whole organisms, and from bacteria through flies, plants and mice. Despite this broad spectrum, one major theme was the advances being made in morphogen research – the French Flag was often flown! There was, as always, an emphasis on informal interactions between young and established developmental biologists a BSDB meeting feature that is key to their friendly atmosphere. Major thanks are due to Andrew Fleming for being the scientific organiser of this very successful conference.

As you will see elsewhere in this newsletter, the 2008 Autumn meeting will also be pioneering, this time by being held for the first time in Spain. It will be in Seville, and is a joint meeting with the Spanish Developmental Biology Society. It follows the successful joint meeting with the French in Nice in 2003. Seville is not much harder to get to than a UK venue, nor much more expensive (even including contribution to a carbon offsetting scheme to mitigate the extra environmental cost), and we anticipate that this will be a very popular meeting. I advise you to book as early as you can. Before that, we have the 2008 Annual meeting in Warwick. This will be joint with the BSCB and, in format and venue, we know that it is a winning formula: possibly less glamorous than Seville. but a meeting that our longstanding members know should not be missed. Sign up soon!

In the last issue of the newsletter, I welcomed three new members of the

BSDB Committee but said goodbye and thanks to four. We now have a replacement for the last position – the new graduate student representative is Gareth Powell from the Sanger Institute. I'd like to welcome him, and we all look forward more of the lively graduate student activities that Raphie Kitson-Pantano developed, and which have become an important feature of BSDB meetings.

Finally, on behalf of the whole society. I would like to congratulate Martin Evans, as well as his colaureates Mario Capecchi and Oliver Smithies, on the spectacular and well deserved award of the 2007 Nobel Prize in Physiology or Medicine. Sir Martin's work on the development of ES cells - the key to making mouse knockouts by homologous recombination – is a milestone in developmental biology. It is hard to imagine how important the research built on their discoveries will be over the next century, not only for developmental biology but also for medicine. UK developmental biology is given a huge boost by the prize, and I hope Sir Martin won't mind if we all briefly bask in the reflected glory. Amazingly, that now makes five out of the last seven Physiology or Medicine Nobels awarded in the broad field of developmental biology - a dramatic illustration of how important our field has become.

"UK developmental biology is given a huge boost by the [Nobel] prize"



### Good and bad news from Elsevier

Unfortunately, discounted BSDB member prices for *Developmental Biology* are to increase by 5% in 2008 to the equivalent of \$363 for the print version. *However*, BSDB members can now also get discounts on *Mechanisms of Development/Gene Expression Patterns* as well. *MOD* is available to

members for £55 and the MOD/GEP set available for £59. In particular, the MOD journal is an active sponsor of the BSDB spring meeting, another good reason to take up these offers.

#### Have your say

If you have news, letters, or comments you would like aired to the developmental biology community, please write to the Editor (andrew.jarman@ed.ac.uk)

# Two major awards to developmental biologists

It's been a good year for recognition of the importance and achievements of developmental biology. In June, a highly prestigious Spanish award — The Prince of Asturias Award for Technical and Scientific Research — went to Peter Lawrence and Ginés Morata. Then in October, the Nobel Prize for Medicine was shared by

Mario Cappecchi, Martin Evans, and Oliver Smithies "for their discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells". Good news for developmental biology and UK science.

### For details of the awards:

http://www.reinounido.info rmacion.lamoncloa.es/en-GB/Home/PRINCIPE+AS TURIAS+WINERS+21.06. 07.htm

http://nobelprize.org/nobel \_prizes/medicine/laureate s/2007/

# The Academy of Medical Sciences — careers website

The Academy of Medical Sciences has launched a new website on careers in biomedical research. The website is designed to act as a portal for information, links and career opportunities for

undergraduates, post graduates, post doctoral researchers and anyone considering a career in biomedical science. Please visit: http://www.academicmedicine.ac.uk/

### **OUP** book offer

In the run up to Christmas, Oxford University Press are offering members of the BSDB 30% discount on all biology books ordered directly through the following link:

http://www.oup.com/uk/sale/science/websocbsdb/.

This special offer ends on 31 December 2007.

### Do your contact details need updating?

As always, it's a hard job keeping the database of the Society membership up to date. If you change your address, please remember to send us the details. You can use a new online feedback form to give us this information.

http://www.bms.ed.ac.uk/s
ervices/webspace/bsdb/B
sdbfeedbackform3.htm.



### **Financial report**

"Company of Biologists increases their support to £25,000."

Our financial statement for the year ending July 31<sup>st</sup> 2007 is presented below. I am pleased to report that the Society continues to remain in good financial health. We had two very successful meetings during the financial year at Dundee and Heriot-Watt which were both well attended. Heriot-Watt being particularly successful as it made a small profit, thanks to the effort put in by the organizers to identify exhibitors and sponsors. I would like to take this opportunity to encourage all our members when they are at one of our meetings to visit the exhibitors. The money they pay to attend our meetings allows us to reduce our meeting registration fees and make our meetings as affordable as we can in the face of ever rising costs. The exhibitors will not return if they do not feel that they are getting a return for their cash,

i.e. sales or potential sales. Equally if you know of a company that your lab uses a lot or you would like to see exhibiting at our meetings, pass their contact details to a BSDB committee member.

We were able to fund the majority of applications we received for Travel Grants to attend meetings. Over the year we awarded £25,382 to 90 members to attend BSDB meetings. As I reported in the Spring, the Company of Biologists generously increased the funding they provide as to support members to travel to meetings or courses overseas. This year we provided £29,050 to 110 members to attend meetings or courses outside the UK. Happily we also finished the year showing a slight surplus sufficient to maintain our assets at an appropriate level.

### Are you paying your fair share?

We still have a 'hard core' of members who are paying less than they should.

Please check your standing order today and update if necessary!

### **Subscription information**

Full members £35 per annum
Student members £15 per annum

Student members that joined the Society in 2003 are politely reminded that they should upgrade their subscription to the full member rate of £35.



### Easier payment option for overseas members

It is possible to pay your subscription by PayPal. This facility is primarily aimed at our overseas members. The process is fairly painless and full instructions can be found on our webpage.

http://www.bms.ed.ac.uk/services/webspace/bsdb/BSDBpaypal.htm

#### FINANCIAL STATEMENT - YEAR ENDING JULY 31st 2007

Balance Sheet			Income & Expenditure Account			
2066/06 g 127.715	Investments Balinis Gifford Managad Fund	2006/67 <u>£</u> 141.963	Income. Membership (Standing Oction) Membership (Cheques) Block Benet (CeS)	27038 1485 25000	Expenditure  Snarts (Oversees & Courses)  Grants (BSBD Meetings)  Small meetings and other DB meetings.	29050 25082 160
10.570 27.447 2.960	Current Assets Barclays Bank High Interest Account (1) Barclays Bank Current Account Barclays Bank Coure Hamiton Account (1,2)	10.820 36,725 2.966	Travel grant fund (CoB) Sale of addresses Spring Meeting 2006 (York) Unpresented cheques	25000 2100 3805 406	Autumn Weering 2005 (Dundee) Spring Masting 2007 (Heriot-Mast) Prizes Committee Expension Administration	6497 10606 1103 2715 1141
40,983	Less Unpresented chaques	53.540 3.748	Interest and investment Appreciation:		BSF Bank Charges Refunds of members' overpayments	3114 40 215
- 6.975	Debrars - Creditors	13.078	Barclays High Interest arc Barclays Louise Hamilton arc	245 34		
31.613	Net Current Assets	36.754	Total Income	85,114	Total Expenditure	80,013
159,328	Total Funds	178,667			Net Surplus for the Year	5,101
					Unrealised Gains on Bailtie Gifford	14,238
accounting stands impor changes to	ere prepared uister the accrual basis comembon, in a rds and Recommended Practice of Accounting by Chi our tinancial arrangements this year.	whes. There have been n			Fund balance at 31st July 2006	159,328
	fi totorast and Loure Hamilton account valuations are restricted account and no call was made on it in the fir				Fund balance at 31st July 2007	178,647



### **Travel grants**

### **BSDB Spring and Autumn** meetings

These are the only UK meetings for which there is BSDB support, grants cover cost of registration (but not conference dinners) and basic travel if funds permit. Currently we are receiving more applications than we can fund in full and preference is given to student members who present posters. BSDB members based abroad are eligible for a contribution (max. £400) to attend our meetings. All applications for travel grants to attend BSDB meetings must be in the hands of the Treasurer by the published deadline.

### The deadline for Spring Meeting 2008 is 31 December 2007

### **Overseas meetings**

There is considerable demand for funds to travel to meetings overseas. Applications are collected each month and a decision on awards made at the end of the month, with funds awarded according to the remaining budget. To allow us to fund as many applicants as possible we are currently limiting awards to a maximum of £400. The total amount needed is taken into account when deciding the amount of the award; however, those artificially inflating their request will be penalised. Preference is given to members presenting work at the meetings.

I process the applications as rapidly as I can but it can be 6–8 weeks after you submit an application before you are notified of your award. Please note that I do not make funds available to attend meetings that have already taken place when I come to consider the applications. Please bear this in mind and submit your application at least two months before the start date of the meeting.

#### **Practical courses**

The BSDB will also provide funds up to a maximum of £500 for members to attend courses or to visit laboratories overseas. These applications are considered alongside those for overseas meetings.

### Applying for a travel grant

Members should complete a Travel Grant Application form and send it to the Treasurer. Forms can be downloaded from the BSDB website: <a href="www.bsdb.org">www.bsdb.org</a>.

Applications for overseas meetings are advised to be submitted 3–4 months in advance so that the BSDB contribution can be used as a lever to prise the rest of the money from other sources. Grants will NOT be awarded in arrears.

<u>Please note</u>: Nobody will be awarded more than one travel grant per year for an overseas trip. No more than two people from one department or one person from a group will be awarded a grant to a particular meeting.

Deadline for Spring Meeting: 31 December 2007

#### Warning!

Only members paying the correct subscription to the Society will be eligible for a Travel Grant

### Seed funding for small meetings

Members may approach the Treasurer for seed funding to help with organising developmental biology events (e.g. one-day meetings) that involve other institutions and at which students and post-docs are encouraged to attend and present work. The BSDB currently supports the meetings of several local developmental biology groups with small ( $\sim$ £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.



### The Graduate Students' Section

### Hello!

### Get in touch and get involved!

I'm happy to consider anything for the newsletter: articles, short tips, etc. If you wish to remain anonymous let me know but in all cases could you please give me your name, the name of your institution and your year of study.

Summer is well and truly over and the change (or the slight decline!) of the weather coincides with the end of the PhD experience for students around the country. Lots of graduate students have finished writing up, made it through a viva and are now poking their heads out of the trench to take a look at life after a doctorate. For those of us who are still engaged in postgrad research, it doesn't hurt to think ahead: take a look at some of the careers and skills advice available on the web and in journals. A few interesting articles about training and careers are highlighted in Greener Pastures (below) to get you started. On a related note, any

BSDB students interested in a career in science journalism can cut their teeth by writing articles for this newsletter - get in touch and get involved (and get something on your CV)!

Don't forget to make a note of the dates of the Spring Meeting in Warwick and ISDB in Edinburgh 2009. I'm looking forward to meeting all of you there. Preparations for student events at these meetings are in hand (see Student Events). If you have any comments, suggestions, or ideas on this or any other matter, then put a post on the Facebook group wall (see BSDBook).

Gareth Powell Sanger Institute gp3@sanger.ac.uk

#### **BSDBook**

Currently 44 members
on FaceBook!
Need advice? Want to
keep in touch with the
students you met at
BSDB socials? Want to
find out if any other
BSDB grads are going
to a conference? Want
to share your BSDB
Meeting photos? Visit
the 'BSDB graduate
student group' at
Facebook.com!

### I. R. Scientist, 1<sup>3</sup>/<sub>4</sub> years (to go)

Listening to the trials and tribulations of thesis writing from other students has inspired me to start planning ahead. I'll start writing down the subjects that I need to explore in the introduction to my thesis. Then I can research each topic individually, build up a bibliography and before I know it, the introduction will be done. So, the preparations begin: I get a nice notebook and a special dedicated pen, making sure to carefully write my name in it and what the book is for. Okay, subjects in the introduction... think carefully now... got it: "DEVELOPMENTAL BIOLOGY".

...This might take a while.





### **Greener pastures**

Short of time? Struggling to find a magic formula for survival as a PhD student? 'Top 10 tips for success in graduate school' (Nature, 433:442) is a short, sweet, philosophical guide to greatness as a postgrad. Some of the advice might be coming a little late ("Go to college to get a broad education") but some is good pep talk for the mid-doctorate blues (repeat after me: "No guts, no glory").

Having put those top ten tips into practice, what is your next move? As Andrew Moore points out in 'Just let me be a scientist' (EMBO reports, 5(7):660-662) academic science has "enviable intellectual and practical freedom", but that this freedom comes at a cost. In this short, thought-provoking treatise on the plight of the junior scientist. Moore discusses the pressures and working conditions of many postdocs and asks if current policy drives some of the best young researchers out of academia and into alternative careers. Unfortunately, many of those that leave seem ill-prepared for the job market.

In 'Are you experienced?' (EMBO reports, 7(10):961-964), the authors argue that young scientists should make use of

some of that freedom to help themselves develop skills away from the bench. Within this essay there is some heartening discussion about the advantages that the current crop of students and postdocs have - a nice counterpoint to the doom and gloom of articles about academic careers. Primarily, this article gives some good practical suggestions for personal development and highlights ways in which taking time to engage in other activities benefits individuals and society.

The key message seems to be that the crux of developing transferable skills is communication, and what better time to start talking than during a PhD? Some more discussion of the benefits of communication is given by this author and a doctorate student colleague in 'Look who's talking too: graduates developing skills through communication' (Nature Reviews Genetics, 8(9):724-726), along with some practical suggestions for opening forums for student communication. Above all, students need to engage with the community they hope to be part of after graduation - by doing so we will change the way science is conducted for the better.

### Questions? Complaints?

Is there anything you would like the student rep to raise for you at committee meetings? Anything you would like to discuss? Don't hesitate to email me (I'll pass it on). I look forward to hearing from you soon. gp3@sanger.ac.uk

#### Student events

Spring Meeting 2008: Meet up with fellow BSDB and BSCB student members at the Evening Social.

Get careers advice at the Careers Workshop Lunch ISDB 2009, Edinburgh: Details to follow - make your suggestions for student events through FaceBook (see BSDBook)



### Article from the Biosciences Federation: In vivo Sciences in the UK

Richard Dyer

BSF

www.bsf.ac.uk

**BIOSCIENCES FEDERATION** 



"The Biosciences Federation is actively working to influence policy and strategy in biology-based research - including funding and the interface with other disciplines - and in school and university teaching. The Federation is also concerned about the translation of research into benefits for society. and about the impact of legislation and regulations on the ability of those working in teaching and research to deliver effectively."

There are frequent reports and comments about the shortage of skills in the biosciences: shortages that are important and potentially damaging to the prosperity of our country. However "skills" do not exist in some semi-independent context. It is always necessary to define what the "skills" are needed for, and this can produce conflicts for those responsible for the delivery of our bioscience skill base.

The first skill that we all need is the skill to be a good and productive citizen. In a knowledge driven economy, scientific skills should be part of the skills portfolio of as many citizens as possible, even though they do not themselves pursue a career in science. For me, it is highly desirable that we have more citizens who understand the scientific method, who appreciate the difference between probabilities and absolutes and who make decisions on the basis of evidence and not Luddite prejudice. With this training, public discussion about climate change, biodiversity or disease will be better informed and there will be greater understanding of the contribution that practicing scientists are making to the debate. In time, the public trust in scientists, which is already quite good, might improve further. The knowledge driven economy demands a scientifically literate population. Delivery of this essential skill is an important responsibility of our schools and universities.

However more usually, a skills shortage is used to describe a more specific problem than the generic need to have science as part of our everyday cultural base. The BSF, together with the ABPI, has just published a report entitled "In vivo sciences in the UK: sustaining the supply of skills in the 21<sup>st</sup> century" (the report is available at www.bsf.ac.uk). One of our recommendations is that a small number of Masters Programmes could be introduced to help alleviate a shortage that is already with us and is having important effects in the pharmaceutical sector. We propose 36 dedicated studentships for this Programme for each of the next three years. This is an important area and yet the solution involves really small numbers: in vivo skills are definitely not required in all life science graduates. Of course, practical skills are very definitely required because most science and most biology are intensely practical subjects.

There are many other areas of the biosciences where skills are being lost and yet the solution needs relatively small numbers of practitioners. Take for example the field of systematics and taxonomy. There is no doubt that we are losing the capacity to identify precisely some of our native species — for example lichens. Yet we need really expert individuals in this area today perhaps even more than in the past: we cannot monitor the effects of climate change on our flora and fauna unless we can identify species correctly! Perhaps we will end up relying on the "gifted amateurs" who already contribute much in this area - but in this case the academic subject will be lost.



The production of modest numbers of high level experts in many areas of the biosciences is predominantly the responsibility of our universities and, to a lesser extent, the Research Councils. I write "lesser extent" because some disciplines — for example taxonomy — can be internationally excellent without relying on large grants. And this leads to a second problem. Much biology today is rightly "big science" - big grants and big teams. The business of running a University means that these big science teams are financially more attractive than those individuals virtually grant free. Furthermore, individuals without grants are likely to find it difficult to meet the charges that Open Access brings. The result of course is that there is real pressure on systematics and taxonomy (and many other minority skills) as a profession. However the country needs these skills.

Clearly the skills landscape is complex and varied. The question to face is whether or not the delivery of highly specialised skills can continue to be left to the vagaries of the market place. This essay is not leading to a conclusion that, for example, all Universities with a life science degree have Masters Programmes for in vivo skills, or that all plant science departments have top level taxonomic skills. That would be absurd! But the question to answer is how we produce those experts that the country requires and in sufficient numbers.

Not everyone will like the last sentence! Some will have a wider

view, especially in the context of their own expertise! But that can be left to the market place. What we need is confidence that the UK will have the full portfolio of bioscience skills that will be essential if we are to maintain our strong global position in this area. These are skills that would be difficult to "buy in" if our own skill base was lost.

**BIOSCIENCES FEDERATION** 



Are you a postdoc or graduate student looking for a job? If you are, you should find a page on the BSF web site helpful (http://www.bsf.ac.uk). This page provides links with very many of the sites that you might want to look at for job advertisements.

From the BSF website:

"The Biosciences Federation is actively working to influence policy and strategy in biology-based research - including funding and the interface with other disciplines - and in school and university teaching. The Federation is also concerned about the translation of research into benefits for society, and about the impact of legislation and regulations on the ability of those working in teaching and research to deliver effectively."





### **BSDB Spring Meeting 2008**

#### Latest meetings news

Check the BSDB website for latest meetings updates and to submit details of meetings to be advertised to members. http://www.bsdb.org

### Warwick, 31 March – 3 April 2008

Joint Symposium with BSCB. BSDB organisers: Mike Taylor and James Briscoe

Participants include Sean Carroll, Eileen Furlong, Margaret Buckingham, Jim Smith, Susan Mango, Ben Scheres, Alejandro Sanchez Alvarado, Masaru Okabe, and Martyn Goulding.

See advert on p13 of this newsletter for full details, and p7 for details of student events, or go to http://www.bsdb.org.

### **BSDB/SEBD Autumn Meeting 2008**

### Seville, Spain, 24-27 September 2008

Joint meeting with Spanish Society for Developmental Biology (SEBD).

### Organisers:

James Castelli-Gair, Acaimo Gonzales-Reves, Alicia Hidalgo, Robert Kelsh.

Speakers include: Michael Averof (IMBB, Greece); Thomas Becker (SARS Centre, Norway); Damian Brunner (EMBL, Germany); Eleine Dzierzak (Univ. Erasmus, Holland); Andrew Fleming (Sheffield, UK); Marcos González Gaitán (Geneva, Switzerland); Cayetano González (Barcelona, Spain); Carl Philipp Heisenberg (Dresden, Germany); Christine Holt (Cambridge, UK); Ben Lehner (Barcelona, Spain); Thierry

Lepage (Nice, France); Sarah A. Teichmann (Cambridge, UK); Emili Saló (Barcelona, Spain); Oscar Marín (Alicante, Spain); Enrique Martín-Blanco (Barcelona, Spain); Gines Morata (Madrid, Spain); W. James Nelson (Stanford, USA); Angela Nieto (Alicante, Spain); Alberto Pascual Bravo (Seville, Spain); Nicolas Tapon (London, UK); Jussi Taipale (Helsinki, Finland); Magdalena Zernicka-Goetz (Cambridge, UK)

Further details will be obtainable in due course: http://www.upo.es/CABD/BSDBandS EBD.html

### Ideas for a meeting?

A major task of the BSDB Committee is to host high quality scientific meetings. We welcome suggestions for future topics for meetings or for a halfthe Spring Symposium.

Contact Nancy Papalopulu

### day themed session at Future BSDB meetings

### Spring/Autumn 2009

Edinburgh International Conference Centre, Edinburgh, Scotland, 6–10 September 2009

The Spring and Autumn meetings will be subsumed in the ISDB 16<sup>th</sup> International Congress of Developmental Biologists. See article later in this newsletter.



### Other meetings of interest

### Developmental Vascular Biology Workshop III

20 January – 3 February 2008 Asilomar, CA, USA For information see <a href="https://www.navbo.org/dvb08Workshop.htm"><u>www.navbo.org/dvb08Workshop.htm</u></a> or contact: Bernadette Englert (301) 760-7745 or bernadette@navbo.org

### Keystone Symposia: Tumor Suppressors and Stem Cell Biology

24–29 February 2008 Vancouver, Canada <a href="http://www.keystonesymposia.org/Meetings/">http://www.keystonesymposia.org/Meetings/</a>

### **Richard Gardner Meeting**

7 April 2008 Oxford

A one day scientific meeting in Oxford to celebrate Richard Gardner's science. Organized by Elizabeth Robertson, Janet Rossant, and Chris Graham.

The following speakers have agreed to talk in this one day symposium:

Andy Copp (UCL), Karen Downs (Madison,WI), Phil Ingham (Biopolis, Singapore), Ginny Papaioannou (Columbia, NY), Liz Robertson (Dunn School), Janet Rossant (Sickids, Toronto, On), Jonathan Slack (Stem Cells, Minneapolis), Patrick Tam (Sydney, Australia).

To attend please book by email, Subject Box: Gardner Meeting. Address: christina.woodward@zoo.ox.ac.uk

## American Society for Developmental Biology

67<sup>th</sup> Annual Meeting

26–30 July 2008 Philadelphia, PA, USA http://www.sdbonline.org/img/webpage.htm

### **European Life Sciences Organisation Annual Meeting**

30 August–2 September 2008 Nice, France

http://www.elso.org/

### 6<sup>th</sup> Centre for Developmental Biology Symposium

24–26 March 2008 Kobe, Japan The sixth CDB symposium covers the integration of neurons into a functioning system during development.

In addition to the invited speakers, a number of poster submissions will be selected for short talks. A limited number of travel fellowships aimed at graduate students and post-docs traveling to Japan are available

http://www.cdb.riken.jp/sympo2008/

#### Latest meetings news

Check the BSDB
website for latest
meetings updates and
to submit details of
meetings to be
advertised to members.
http://www.bsdb.org

# Keystone Symposia: Wnt/β-Catenin signalling in Development and Disease

17–22 February 2008 Keystone, Colorado, USA <a href="http://www.keystonesymposia.org/Meetings/">http://www.keystonesymposia.org/Meetings/</a>

### Cell and Developmental Biology of Xenopus

5–15 April 2008
Cold Spring Harbor, USA
The course combines intensive
laboratory training with daily lectures
from recognized experts in the field.
Students will learn both emerging
technologies and classical techniques to
study gene function in Xenopus
development. An important element will
be the informal interaction between
students and course faculty.

http://meetings.cshl.edu/courses/c-xeno08.shtml

### **American Society for Matrix Biology**

7–10 December 2008
San Diego, California, USA
Program Chair: Bill Parks, University of
Washington, Co-Chairs: Jaime
Fitzgerald, Karen Lyons, Joanne
Murphy-Ullrich, Ambra Pozzi, Ralph
Sanderson, Marian Young, and Peter
Yurchenco.
http://www.asmb.net.



International Society for Developmental Biology Congress 2009

For details and updates, visit: <a href="http://www.in-conference.org.uk/IS">http://www.in-conference.org.uk/IS</a>
<a href="mailto:DB2009/">DB2009/</a>
Or contact: <a href="mailto:isdb@in-conference.org.uk">isdb@in-conference.org.uk</a>"

### Edinburgh International Conference Centre, Edinburgh 6–10 September 2009

Even though it may still seem a long way off, planning for this showcase meeting is well advanced. The spotlight of the developmental biology world will be on Britain and it is very important for BSDB and for British developmental biology that this meeting is a big success. Up to 1500 participants are anticipated, and we envisage that every UK developmental biologist will want to attend.

Likely themes include:

- Darwin and Development
- Stem cells and pluripotency
- Regeneration and medicine
- Neural development
- Micro RNAs



- Behaviour and neural circuit development
- Genomics and development
- · Modelling, systems logic and networks
- Asymmetry
- Signalling
- Cell biology of development
- · Growth control and tumours
- Chromatin and epigenetics
- Morphogenesis
- Organogenesis
- Cell migration
- Cell adhesion



### BSCB Autumn Meeting: Epithelial Morphogenesis and Diseases

15–17 September 2008 University of Greenwich, London

http://www.bscb.org/

### GSA 49<sup>th</sup> Annual Drosophila Research Conference

2–6 April 2008 San Diego, California, USA

http://www.drosophilaconf.org/genetics/gsa/dros/dros20 08/

### **Gene Expression and Analysis**

26–28 March 2008 University of Manchester

Three linked focused meeting sponsored by the Biochemical Society:

- -Transcription
- -Post-transcriptional control
- -New methods for study of proteinnucleic acid interactions

http://www.biochemistry.org/meeti
ngs/programme.cfm?Meeting No=
SA077



# 2008 Spring Meeting of the BSCB and BSDB

www.bscb.org



March 31st-April 3rd 2008 University of Warwick Conference Centre see Society websites for details and registration

OW RSDB

Amanda Fisher Siegfried Hekimi

W.H. Irwin McLean

Mick Tuite

Phil Beales

Keith Gull

Takashi Toda

Pierre Coulombe

**Donald Ingber** 

Laura Machesky

Michael Sheetz

Richard Treisman

Ana Maria Cuervo

Chris Dobson

Rick Morimoto

David Rubinsztein

Elizabeth Craig

Sandrine Humbert

David Ron

Miguel Seabra

**BSCB TOPICS** 

Modulation of genetic traits

Biogenesis and specialization of the cytoskeleton

Signalling, the cytoskeleton and mechanotransduction

Cellular responses to

protein misfolding Control and regulation of

intracellular traffic

www.bsdb.org



Alfonso Martinez Arias Naama Barkai

Sally Lowell

Jim Smith

**Greg Elgar** 

Eileen Furlong

Susan Mango

Peter Rigby

Alejandro Sanchez Alvarado

**BSDB TOPICS** 

Quantitative Analysis and interpretation of

development signals

Gene networks and control of

gene expression

Regeneration and repair

Cell fusion in

development From neuronal identity to circuit formation

Plenary lectures by

Margaret Buckingham

Vassilis Pachnis

**Ben Scheres** 

Masaru Okabe

Benjamin Podbilewicz

Renate Renkawitz-Pohl

Karl Swann

Martyn Goulding

**Bill Harris** 

Stefan Thor

Siew-Lan Ang

### Lenny Guarente and Sean Carroll

Programme includes poster and workshop sessions ABSTRACT SUBMISSION DEADLINE 15th January 2008 Bursaries for Society Members available - deadline 31st December 2007

# Mechanisms of early development: cell fate determination, morphogenesis and patterning

Lisbon, Portugal 31 August – 2 September 2007

#### Catherine Scahill

Department of Zoology, University of Cambridge With the help of a travel grant from the BSDB, I was able to attend the 'Mechanisms of early development: cell fate determination, morphogenesis and patterning' conference at the Instituto Medicina Molecular in Lisbon, 31<sup>st</sup> August to the 2<sup>nd</sup> September 2007. Not only did this give me the opportunity to present a poster for the first time, but it was also a thoroughly interesting and enjoyable meeting.

With fewer than 200 participants the conference had a friendly and relaxed atmosphere, which strongly encouraged a lively discussion of points raised and interaction between people from different disciplines. The conference dinner in the particularly beautiful setting of the Estufa Fria (winter gardens) provided an excellent opportunity to get to know other students with an interest in developmental biology from all over the world. I am sure that we all appreciated the surprise Fado performance at the end of the evening.

The conference had an amazing line up of speakers whose topics covered areas from transcriptional control in *Drosophila* to patterning the mouse embryo. Eric Wieschaus opened the conference with a plenary talk on cell fate and morphogenesis during *Drosophila* gastrulation, which introduced the topic of cell shape changes that drive ventral furrow formation. The regulation of cell shape changes became a common

theme in later talks. Maria Leptin's talk showed how a gene hierarchy can control these shape changes by inhibiting cell division, and in parallel activating the G protein coupled receptor, Concertina, and relocalising proteins that ultimately leads to myosin activation, causing apical constriction.

A second key area covered by many of the talks was gradient formation and signalling. Phil Ingham challenged the classical morphogen concept by adding an additional level of complexity: a change in competence of cells to respond to the morphogen with time, which is necessary for patterning skeletal muscle in his model organism, the zebrafish. It was also interesting to hear about the kinetics of gradient formation by Marcos Gonzalez-Gaitan, who focused primarily on DPP and used FRAP to monitor the movement of molecules. He was able to highlight the differences in the kinetics of movement of Dpp molecules compared to Wingless. The rich variety of topics and organisms discussed in talks and posters was a particularly strong point of the conference.

I am privileged to have been able to attend this conference and I look forward to it again next year.

Catherine Scahill
PhD student
Dr Helen Skaer's Laboratory
Department of Zoology
Cambridge
U.K.

"Phil Ingham challenged the classical morphogen concept by adding an additional level of complexity: a change in competence of cells to respond to the morphogen with time"



### **The Notch Meeting**

Athens, Greece 23–25 September 2007

This meeting was organized by Spyros Artavanis-Tsakonas (Harvard Medical School, USA), and brought together scientists from all around the world to discuss varied aspects of Notch signalling and specifically its involvement in human disease. The meeting was held in Athens, a spectacular city with ancient buildings, great history, amazing nightlife, and good Mediterranean food. The meeting started on the evening of Sunday 23<sup>rd</sup> September with a reception at Athens Plaza Hotel. Apart from nice food and drinks, it was a good opportunity to meet the participants and talk to friends and fellow researchers.

Throughout the conference, there were talks about the molecular aspects of Notch signalling, structural studies on Notch signalling, developmental regulation and cell fates in specific systems, Notch and immunology, Notch signal integration, Notch and diseases, oncogenesis and proliferation and lastly Notch disease targets and therapeutic approaches. One of the early highlights was the session on the "molecular aspects of signalling", with some excellent talks on the importance of DSL ligand endocytosis in Notch activation. Marc Muskavitch (Boston College, USA) gave an interesting talk about the roles of dynamin and clathrin in Delta-Notch interactions and the requirement for dynamin and clathrin heavy chain in Delta endocytosis and Notch transendocytosis. Gerry Weinmaster (UCLA, USA) emphasized the mechanisms that govern constitutive versus Notch mediated DSL endocytosis, whereas Martin Baron (University of Manchester, UK) looked at the regulation of Notch in the endocytic pathway by Deltex and Suppressor of deltex (Su(dx)).

The session on "Notch and cell fates in specific systems" confirmed the

pleiotropic function of Notch signal and the diversity of experimental systems we use today to study the effects of Notch signalling. Gerhard Holger (London Research Institute, Cancer Research UK) focused on the function of VEGF and Notch during angiogenic sprouting. He showed that while VEGF-A is the enabling inducer of tip-cell formation, Notch signalling is the balancing signal required to pattern the tip-cell response in sprouting angiogenesis. Nick Gaiano (Johns Hopkins University, USA) looked at the differences between neural stem cells and intermediate neural progenitors. He suggested that both cell progenitors respond to Notch receptor activation, but that neural stem cells signal through the canonical Notch effector C-promoter binding factor1 (CBF1), while intermediate neural progenitors have attenuated CBF1 signalling. He also showed that while neural stem cells generate neurons, astrocytes and oligodendrocytes at similar frequencies, intermediate neural progenitors are predominantly neurogenic.

#### Nikolas Nikolaou

Developmental Neurobiology National Institute for Medical Research London

"One of the early highlights was the session on the "molecular aspects of signalling", with some excellent talks on the importance of DSL ligand endocytosis in Notch activation."





Several talks were followed addressing the role of Notch in the vertebrate segmentation clock. In one of these talks, Julian Lewis (London Research Institute, Cancer Research UK) suggested that the role of Notch is to maintain a synchrony rather than produce the oscillations during zebrafish somite segmentation.

Notch signalling has also been linked to many human diseases, for example, Notch signalling components appear to be mutated during tumorigenesis, and there was a debate whether Notch acts as a tumour suppressor or an oncogene. Ioannis Aifantis (New York University, USA) looked at the regulation of hematopoiesis by the Notch1 ubiquitin ligase Fbw7. He found that Fbw7 interacts with Notch1, driving it to proteasome-mediated degradation. He presented data suggesting that either loss of Fbw7, or Notch1 activating mutations may be

responsible for the majority of T-cell acute lymphoblastic leukemia (T-ALL) cases in humans. Silvia Fre (Institut Curie, France) examined the integration of Notch and Wnt signals in intestinal homeostasis and tumorigenesis. She showed that expression of a constitutively active form of Notch leads to a dramatic increase in the pool of undifferentiated progenitor cells, and impairs the differentiation of all secretory cell types of the intestine. She further showed that the proliferation effect is due to the concerted action of Notch and Wnt, while cell fate determination appears to be solely controlled by Notch signals.

In summary, this was such a successful, informative and enjoyable conference and everybody looks forward to exciting progress in the two years until the next Notch meeting will be held.

"Julian Lewis
suggested that the
role of Notch is to
maintain a synchrony
rather than produce
the oscillations during
zebrafish somite
segmentation"





### **FEBS Workshop: 'Generating Neural Diversity in the Brain**

Capri, Italy 13-16 October 2007

The speakers attending the FEBS workshop 'Generating neural diversity in the brain' read as a who's who of developmental neurobiology. Set on the beautiful island of Capri, those of us fortunate enough to attend this unique meeting were privileged to hear some of the most influential figure in the world of developmental neurobiology today, such as John Rubenstein, Arnold Kreigstein, Magdalena Gotz, Antonio Simeone and Elizabeth Grove, discuss their ideas and current research interests in a relatively informal setting. Talks focused on cellular complexity of the central nervous system; how differential gene expression and multiple signalling factors influence and control the cellular mechanisms which generate the extensive cellular diversity of the adult central nervous system.

The plenary lecture was given by Arnold Kreigstein (School of Medicine, UCSF) who reminded us of why we were there and set the scene for the high quality of talks to follow. He introduced the intermediate progenitors of the forebrain: cells which divide away from the ventricular surface and generate neurons, resulting in the expansive cell number of the mammalian cortex. He reminded us that the developmental processes are not restricted to the embryo or early post-natal period as the subventricular zone of the adult contains neural stem cells in some ways identical to those found in the developing embryo

The first session of the meeting examined the role of transcription factors in neurogenesis and included talks on the generation of forebrain, midbrain and corticospinal neurons. Francios Guillemot (NIMR, London) gave an eloquent and enlightening talk on the role of the proneural gene Neurogenin 2 (Ngn2) in cortical development, discussing recent work from his laboratory whose aim was to identify regulatory targets of Ngn2 using a combination of genetic and bioinformatic approaches. We were also privileged to hear Antonio Simeone (Institute of

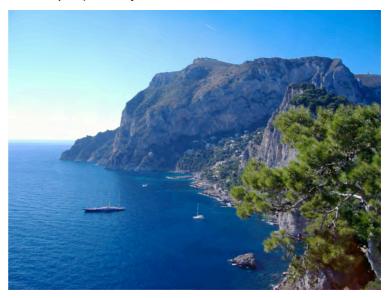
Genetics and Biophysics, Naples) discuss recent work from his laboratory identifying a role for Oxt2 in specification of dopaminergic neurons of the ventral midbrain. Invoking a transgenic approach, they had removed Otx2 expression from engrailed-1 expressing cells of the ventral midbrain and converted their fate from dopaminergic to seratoninergic. He showed that loss of Nkx2.2 from these cells resulted in restoration of their dopaminergic phenotype suggesting that repression of Nkx2.2 is crucial to promote dopaminergic fate in cells of the ventral midbrain, an intriguing finding which was elegantly presented.

How cortical neurons migrate to their final destination in the brain was covered in the next session entitled 'Neuronal migration in brain development'. Despite a somewhat all-encompassing title, this extensive area of research was covered in a series of enlightening talks by speakers such as Gord Fishell. Oscar Marin and Carlos Ibanez who told us about the genes involved in migration of cortical interneurons and cells of the rostral migratory stream as well as identifying epigenetic factors involved in these process such as neurotrophins, GNDF and the TGF- $\beta$  superfamily.

Dario Magnani and Jane Quinn

Genes and Development Group, Centre for Integrative Physiology, University of Edinburgh

"The speakers attending the FEBS workshop 'Generating neural diversity in the brain' read as a who's who of developmental neurobiology."





### 18 Meeting report

Together this session highlighted the complexity of the orchestration of neuronal migration during forebrain cortical development.

Next we heard about 'Signalling, proliferation and patterning'; three words which make these highly complex processes sound almost simple! Speakers included Magdalena Gotz, Paolo Malatesta, Elizabeth Grove and Michele Studer who updated us on the roles of Pax6, Fgf8, Smad4 and Coup-TF1 in proliferation and patterning of the cerebral cortex. However, the most interesting talk of this session was given by John Rubenstein (UCSF) on the roles of Fgf8 and Fgf17 in patterning of the frontal cortex. Not least for the intriguing picture of him as a young scientist reminding us all that even the greatest had to begin somewhere ....! Rick Livesey (Gurdon Institute, Cambridge) closed this session describing microarray experiments designed to identify genes containing binding sites for the transcription factor Pax6. Using this approach some 2000 genes were identified which contained putative Pax6 binding sites. This extensive list included genes known to be activated by the Notch pathway, those involved in cell cycle regulation or expressed by neural stem cells or basal progenitors and genes known to be involved in migration of cortical interneurons. As microarray experiments often generate a daunting list of candidate genes, the presence of which may also be influenced by experimental design rather than real biological relevance, this study highlighted perhaps how some of these experimental hurdles can be avoided by looking for biologically relevant binding rather than just differential gene expression.

The last session of this intense meeting was entitled 'Neurogenesis: neural stem and progenitor cells'; a brief name for an area of enormous current interest. Pierre Vanderhaeghen (IRIBHM, University of Brussels)showed us that we may be one step further towards the goal of reliably generating cortical neurons from embryonic stem (ES) cells in vitro than ever before. Neural differentiation of ES cells occurs in vitro as a default: in the absence of any exogenous signalling, ES cells differentiate into forebrain but not hindbrain neurons. Current experimental protocols have been defined which differentiate ES cells to many of the diverse repertoire of cortical neural subtypes: from early born Cajal-retzius cells to the latergenerated pyramidal cells. However, populations of neurons generated in these cultures tend to be highly heterogeneous containing neurons of ventral telencephalic identity as well as those which will give to cortical neuronal subtypes. Vanderhaeghen's group found they could instruct ES cells to differentiate specifically into cortical neurons in vitro by inhibiting sonic hedgehog (Shh) signalling - a morphogen which is important in conferring the ventral identity in the telencephalon. Using cyclopamine to inhibit endogenous Shh signalling in their cultures, they were

able to generate cortical neurons from ES cells which maintained the same molecular, cellular and functional characteristics as those generated in vivo. In addition, neuronal subtypes were generated in vitro in the same temporal pattern as their wild type counterparts. When transplanted in vivo, these ES cell derived cortical neurons incorporated correctly into cerebral cortex. This fascinating work has significant implications for replacement therapy using correctly specified cortical neurons grown from ES cells in vitro.

The session continued with a presentation by Maria Pia Postiglione (IMBA, Vienna) who showed how the orientation of cell division in the ventricular zone of the cortex is important for neural differentiation. She first demonstrated that the mouse insc protein, in flies, has the same role as the homolog of the Drosophila Inscuteable protein in orientating the spindle to promote asymmetric division in the Drosophila neuroblast with one cell remaining a progenitor whilst the other differentiates into a neuron. She showed that the insc protein in rat has a similar role in orientating the plan of cell divisions in the retina neuroepithelium. With the use of conditional knockout mice and mice over-expressing insc. her preliminary data suggests a function in spindle orientation and also in generating cortical progenitors in the VZ.

In the next session Luciano Conti (University of Milan, Italy) reminded us that in order to productively use neurons derived from in vitro differentiated stem cells it is important to enhance the efficiency of neural generation in vitro. To achieve this he described a novel in vitro culture system that allowed the propagation of neural stem cells with the characteristics of neurogenic radial glia. Lastly, Noel Buckley (Institute of Psychiatry, London) closed the session by speaking about the importance of the transcriptome and the epigenome in stem cell differentiation. Transcriptome and epigenome collectively define and regulate the state of differentiation of the cell. Transcription factors modify the transcription status of the cell, but this activity also modifies the chromatin, which could change its accessibility to the transcription factor itself. He proposed the hypothesis that some of the lineage specific cell lines (such as that described by Luciano Conti) could contain epigenetic markers typical of open chromatin (transcription factor accessible) and closed chromatin (transcription factor inaccessible) in their tissue specific regulatory regions, giving the audience much pause for thought.

Overall, this was a stimulating and enlightening meeting which gave those of us at the start of our scientific careers the opportunity to hear and meet some of the most influential figures in the world of developmental neurobiology in a setting conducive for interaction and learning. Undoubtedly a valuable experience for all those who attended.



### **RIKEN Brain Science Institute**

#### Summer 2008 Tokyo, Japan

The RIKEN Brain Science Institute (RIKEN BSI), located just outside Tokyo, Japan, offers a summer program to train advanced students interested in brain function. Applicants may choose either a two-month laboratory internship (Plan A) within a RIKEN BSI laboratory, or participate in an intensive 11-day lecture course (Plan B) featuring a distinguished international faculty. Those participating in the internship may also enroll in the lecture course.

Typically, around 45 international students are accepted to the Summer Program each year. Attendees have wide-ranging academic backgrounds and are usually enrolled in graduate courses, or have recently embarked on postdoctoral research. However, candidates holding other positions are encouraged to apply.

Students unable to provide their own financial support will be considered for travel and accommodation bursaries provided by RIKEN

Plan A is a two-month internship in a BSI lab (June 25-August 20), and Plan B is a twoweek lecture course (July 28- August 8).

Please see

http://www.brain.riken.go.jp/summer.html for further information.

The deadline for application is 29 February 2008.

### **Embryology Course at Woods Hole Marine Biological Laboratory**

14 June-27 July 2008 Wood Hole, Massachusetts, USA

Encourage your best senior graduate students and postdoctoral fellows to attend the 2008 summer course "Embryology: Concepts and Techniques in Modern Developmental Biology" at the Marine Biological Laboratory from June 14 - July 27, 2008

(http://www.mbl.edu/education/courses/summer/ course embryo.html). This course provides a unique intensive laboratory-lecture experience in contemporary developmental biology. Students receive instruction from leaders in the field and also have the opportunity to conduct a series of laboratory investigations using stateof-the-art equipment and a wide range of model and non-model developmental organisms. We believe that the unique educational experience provided by the Embryology Course is not available at any home institution. In our experience, students leave this course with an increased breadth of understanding together with practical and novel laboratory experiences and a greatly expanded network of scientific colleagues.

Funds are available to provide substantial financial assistance to defray the cost of tuition. In 2007 the MBL was able to provide up to 85% of these costs from NIH funding to the course as well as from endowed scholarships.

The Embryology Course is an intensive sixweek series of lectures, discussions and laboratory exercises taught by a number of prominent developmental biologists. The curriculum is divided into three modules: 1) modern comparative embryology and molecular phylogeny, cell lineage and cell specification; 2) pattern and organ formation; and 3) transcriptional regulation and the analysis of gene networks and developmental pathways. Students will be exposed to a broad variety of marine and terrestrial invertebrates and vertebrates, and the increasingly sophisticated methods employed to analyze their development. Daily lectures, extended discussions and frequent informal talks provide an intense intellectual experience where students and faculty alike are immersed in sophisticated and continuously changing conceptual and experimental explorations.

If you have any questions please contact Carol Hamel, Admissions Coordinator, at: admissions@mbl.edu



### Reviewing a book for the BSDB

Suggestions for future book reviews are always welcome. If you know a book you think should be reviewed, please contact the Editor. Reviewers receive a free copy of the book for their trouble.

Here are some possibilities:

#### From CUP

Principles and Techniques of Biochemistry and Molecular Biology, 6th edition (Hardback) Edited by Keith Wilson, John Walker New, fully updated edition of bestselling textbook, expanded to include techniques from across the biosciences.

http://www.cambridge.org/0521828899

Key Experiments in Practical Developmental Biology (Hardback)

Edited by Manuel Marl-Beffa, Jennifer Knight This manual presents 27 laboratory exercises for student practical classes in developmental biology. http://www.cambridge.org/0521833159

RNA Interference Technology: From Basic Science to Patel & Bertics,

Drug Development (Hardback) Edited by Krishnarao Appasani

Cutting-edge overview of RNA interference (RNAi) technology, covering both fundamental science and

applications.

http://www.cambridge.org/0521836778

#### From Humana Press

Reporter Genes: A Practical Guide Methods in Molecular Biology, Vol 411 D. Anson 978-1-58829-739-6

Hedgehog Signaling Protocls Methods in Molecular Biology, Vol 397 J.I. Horabin 978-1-58829-692-4

Epidermal Growth Factor Patel & Bertics, 1-588-29421-8

DNA Repair Protocols. Mammalian Systems. 2<sup>nd</sup> ed. Daryl S. Henderson (ed) 1-58829-513-3/973-7

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Gastrulation. From Cells to Embryos Claudio Stern 087969 7075

Fly Pushing. The Theory and Practice of Drosophila Genetics, Second Edition Ralph Greenspan 087969 7113 The Condensed Protocols From Molecular Cloning: A Laboratory Manual This manual is a single-volume adaptation of the three-volume third edition of Molecular Cloning: A Laboratory Manual.

Won for All: How the *Drosophila* Genome Was Sequenced Michael Ashburner

The Strongest Boy in the World: How Genetic Information is Reshaping Our Lives
Philip R. Reilly



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 Nancy Papalopulu (or another committee member). The officers of the Society will be happy to answer any questions relating to their specific subjects.

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# The Back Page

Mutation and gene names from a parallel universe

Don't forget to visit the website for latest news:

www.bsdb.org

**TGIF** 

A gene whose mutation creates uncoordinated movement on Friday nights. A temporally sensitive allele of *legless (LI)*.

Meaningless (Mnl)

Spudulike (Spu)

A mutant potato that tastes like chocolate.

Eyeless (Ey)

Another potato mutation: exceptionally smooth skin. *ey;spu* double mutant is highly prized.

Bad penny (Bp)

A gene that turns up in all microarray experiments – no sequence homology and no known function except the power to annoy.

Splendidissimus (Spl)

A gene named by someone in the 19<sup>th</sup> century trying to be smart.

Supermario (Sm)

A gene named by someone in the 21<sup>st</sup> century trying to be smart.

Sonic hedgehog (Shh)

Oh wait, that one actually exists...



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http://www.biologists.com/web/index.html



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