Spring 2004

Annual Symposium

To be held jointly with the Genetics Society at Warwick University

14 March - Tuesday 16 March, 2004

Spring 2004

Developmental Biology Annual Symposium

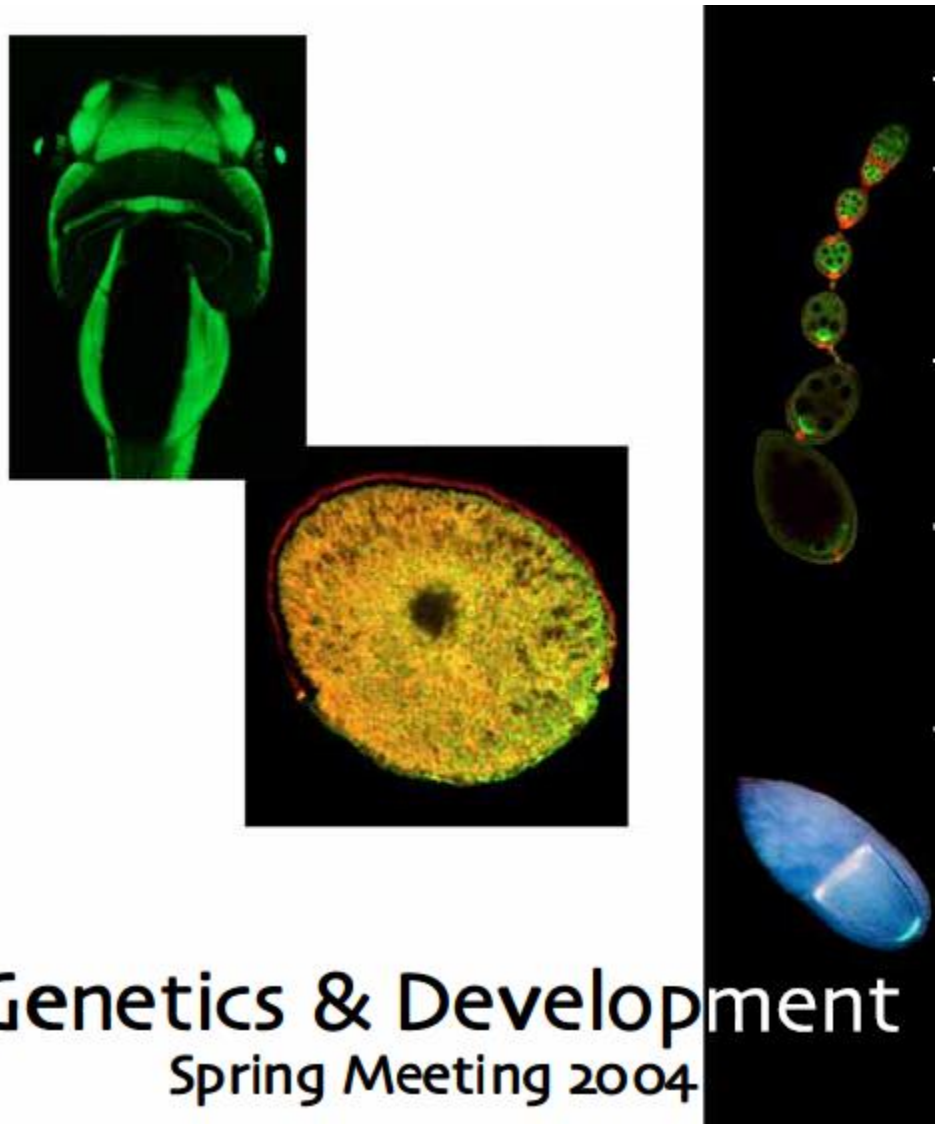
To be held jointly with the Genetics Society at Warwick University

14th March – 16th March, 2004. Organisers: Mike Jones & Ivor Mason

The 2004 Spring Meeting will continue with the format that proved successful at the 2003 Symposium. Half-day sessions with specific themes will be organised to provide an up-to-date report on the latest findings in the general field of Developmental Biology. The meeting will be held jointly with the Genetical Society and one half-day session will be joint. Topics for the 2004 Annual Symposium will be:

1) Stem Cells	(chair: Austin Smith)
2) Organogenesis	(chair: Chris Wright)
3) Polarity	(chair: Daniel St. Johnstone)
4) Evolution of Developmental Mechanisms	(organised jointly with Gen Soc)
5) A session honouring Chris Graham	(chair: Richard Gardner)

Each session will consist of an introduction by the section chairperson followed by talks from four invited speakers. It is intended that three shorter talks in each session will be chosen from abstracts submitted for the meeting.



BSDB Spring Meeting 2004

Joint with GenSoc

Warwick, 14th – 16th March

For further details see page 9 and

www.genetics.org.uk

Registration and Abstract Deadline:

16th January, 2004

Deadline for Travel Grants:

19th December, 2003

Spring Meeting with Genetics Society
14th – 16th March 2004, University of Warwick

This meeting will cover a broad range of subjects of interest to geneticists, developmental biologists and biologists in general. The meeting will include plenary and parallel sessions, medal lectures, platform presentations from selected abstracts and poster sessions

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PROGRAMME OUTLINE

SESSION 1A: Genomic technologies in Drosophila whole genome analysis
Julian Dow, Glasgow, UK
Eileen Furlong, Heidelberg, Germany
Renato Paro, Heidelberg, Germany

SESSION 1B: Stem cells
Austin Smith, Edinburgh, UK
Alexander Medvinsky, Edinburgh, UK
Haifan Lin, Durham, USA
Kiyokazu Agata, Kobe, Japan

SESSION 2A: Balanced polymorphic systems
Mikkel Schierup, Aarhus, Denmark
Scott Edwards, Washington, USA
David Conway, London, UK

SESSION 2B: Polarity
Daniel St Johnston, Cambridge, UK
Shigeo Ohno, Yokohama, Japan
David Strutt, Sheffield, UK
Tony Hyman, Dresden, Germany

SESSION 3A: The evolution of repetitive DNAs
Mark Batzer, Louisiana, USA
John Moran, Ann Arbor, USA -
Andrew Flavell, Dundee, UK

SESSION 3B: Organogenesis
Chris Wright, Nashville, USA
Susan K. McConnell, Stanford, USA
David Wilkinson, London, UK
Malcolm Logan, London, UK

SESSION 4A: Pharmacogenetics: Challenges and opportunities
Sanjay Sisodiya, London, UK
Roland Wolf, Dundee, UK
Lefkos T. Middleton, GlaxoSmithKline, UK

SESSION 4B: Vertebrate development: A session in honour of Chris Graham
John K. Heath, Birmingham, UK
Richard Gardner, Oxford, UK -
Sir John Gurdon, Cambridge, UK
Liz Robertson, Cambridge, USA
Andy P. McMahon, Cambridge, USA
Frank Costantini, New York, USA

SESSION 5: Evolution of patterning mechanisms
Diethard Tautz, Cologne, Germany
Victoria E. Prince, Chicago, USA
Seb Shimeld, Reading, UK

SPECIAL LECTURES
The Genetics Society Medal Lecture
Peter Holland, Oxford, UK
BSDB Plenary Lecture
Eddy de Robertis, LA, USA
The Genetics Society Balfour Lecture
Gilean McVean, Oxford, UK
BSDB Waddington Medal Lecture
Announced at the conference

COMPETITIONS
GenSoc/Promega Young Geneticist of the Year Award
BSDB Poster Prize
BSDB Beddington Medal
GenSoc/Trends in Genetics Student Poster Prize

POSTERS AND ORAL PRESENTATIONS
Scientific posters for the meeting are welcomed from all participants (students, postdocs and others). There will be two formal poster sessions but posters will be on display throughout the meeting. The programme has an additional **21 slots for oral presentations selected from submitted abstracts.**

STUDENT GRANTS
Student members of either The British Society for Developmental Biology or The Genetics Society are eligable to apply.

Deadline for BSDB student grants: 19th December 2004

SUPPLIER'S EXHIBITION
Open to companies who wish to exhibit their products.

ORGANISERS
Administration for this meeting will be managed by the Genetics Society. A list of the scientific organsiers is available at www.genetics.org.uk

INFO
Jayne Richards: ***mail@genetics.org.uk***
Tel.: 0131 527 4472
Fax: 0131 440 0434

For further information and online registration please visit: www.bsdb.org.uk or www.genetics.org.uk

Abstract Submission and Registration Deadline – 16th January 2004

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Abstract Submission and Registration Deadline – 16th January 2004

Warwick again, but what a great meeting

The University of Warwick was host again to this year's Spring Meeting, a joint meeting of the Genetics Society and the BSDB. Wide-ranging is possibly an understatement to describe the meeting's scientific coverage (from stems cells to evolution of patterning mechanisms) and diverse were the model systems presented (mouse haematopoiesis to spider neurogenesis); all-in-all a superb programme pulled together by the able hands of **Ivor Mason** and **Mike Jones** and co-ordinated by the pro-active session chairmen: **Daniel St Johnston** (polarity), **Christopher Wright** (organogenesis), **Adam Wilkins** (evolution of patterning mechanisms), **Austin Smith** (stem cells), and **Richard Gardner** (honouring **Chris Graham**).

As recipient of the 2004 Genetics Society Medal, **Peter Holland**, Linacre Professor of Zoology in the University of Oxford, made a prominent and fitting start to the meeting with a plenary lecture on 'Gene clusters, germ layers and the Bilateria'. Peter highlighted the key differences between diploblasts and triploblasts and the advantages gained by this evolving body plan. He effortlessly distilled recent work in comparative embryology that then led him to propose how evolution may have achieved the 3 germ layers of living bilaterians by using 3 different homeobox gene clusters: the hox cluster to pattern the ectoderm (incl neurectoderm), the parahox cluster to pattern the gut and the NK cluster to pattern mesoderm.

The meeting then launched into consecutive sessions on stem cells, polarity, organogenesis and the evolution of patterning mechanisms, interspersed by further plenary lectures, and medal awards. What follows are but a few of the many highlights:

Stem cells: The ability of a planarian to regenerate completely from a piece of tissue that represents less than 1/279 of the adult organism demonstrates just how useful these organisms could be in providing important insights into the mechanisms that define and regulate pluripotential stem cells. **Kiyo Agata** from RIKEN in Kobe, Japan, is tapping this potential and gave a fascinating lecture on his group's efforts at molecular characterisation of planarian stem cells, the neoblasts. Kiyo showed that neoblasts are sensitive to x-irradiation and has used this property to identify 2 populations located within the mesenchyme: a resting, slowly dividing population found on the periphery of the mesenchyme from head to tail, and a second BrdU positive population that is restricted spatially to the deeper mesenchyme located around the intestine. Kiyo also presented evidence for a stem cell regulator called noudarake, an FGFR-like molecule that is responsible for restricting a regenerating brain to the head region of a planarian. nou-darake is Japanese for 'brains everywhere' and this is what results from Ndk loss-of-function caused by RNA interference. Kiyo proposed that Ndk functions within neoblasts to inhibit FGF signalling as demonstrated by its ability to prevent gastrulation in Xenopus embryos.

Neural induction - double assurance: On the second day at the conference we were privileged to receive a plenary lecture from **Eddy De Robertis**, who is the current President of the International Society of Developmental Biologists (ISDB). Sporting his beloved Xenopus jumper, Eddy began by showing us that Xenopus neural induction begins earlier than previously thought and requires the activity of 2 distinct signalling centres: the Nieuwkoop centre and the preorganiser BCNE (Blastula Chordin and Noggin Expressing) domain. He proposed a model whereby following an early b-catenin signal, the Nieuwkoop centre induces endomesoderm and the BCNE predisposes the prospective neurectoderm to neural induction in response to endomesodermal signals. Eddy went on to present a molecular mechanism for the integration of anti-BMP, FGF and IGF signals that induce neural differentiation: BMP inhibition is achieved by Chordin/noggin inhibition of BMP receptors on one hand, and then by targeting the downstream BMP-effector, Smad1, whose activity is inhibited by phosphorylation via FGF/IGF activated MAPK activity. BMPs thus require low MAPK activity in order to work.

In the **Organogenesis** session, **David Wilkinson**, in a departure from the Eph-ephrin field, presented his groundbreaking data that implicates Notch signalling in boundary formation in the zebrafish hindbrain. In much the same way as Radical Fringe (Rfng) operates in the Drosophila wing imaginal disc, David showed that this molecule modulates notch signalling in boundary cells via activation by Delta. Using a series of striking fluorescent images, David showed that activation of notch signalling leads to cells segregating to the boundaries. Furthermore Notch signalling acts to maintain boundary cells by preventing premature neuronal differentiation. Knockdown of Rfng in boundary cells leads to spreading of boundary cells. Proneural and delta gene expression in cells adjacent to the boundary restricts boundary spreading. Therefore lateral inhibition is working in both directions and Notch activation couples the regulation of location and differentiation in hindbrain boundary cells.

The prestigious Waddington medal was awarded to **Jeff Williams**, in honour of his enormous contribution to British developmental biology over the last 35 years, not least his most recent seminal work on cellular differentiation in the slimemould, Dictyostelium. He made a lasting impression by concluding his lecture with an audiovisual rendition of his hilarious: '**yesterscene meets Stratagene**' - a poem set to the Beatles tune, 'Yesterday'– quote: 'It came about as a result of having to recall all the changes that have occurred over my career and then extrapolating them to imagine how Darwin would view our present scientific culture'.*(see "Yesterscene" link on the website: http://www.bsdb.org)*

Vertebrate development: a session in honour of Chris Graham: Chris Graham started as an amphibian embryologist doing a D.Phil with **John Gurdon**. Postdoctorally, he switched to mammalian development with initial guidance from the late **David Kirby**. In this field, his wide-ranging research has included meticulous analysis of cell fate and lineage in early development, use of teratocarcinomas as a model system for the embryo, the study of imprinted genes implicated in growth and, most recently, efforts to erase the programming of differentiated cells. In addition, through his undergraduate teaching and pre- and post-doctoral research training, he has also played a seminal role in recruiting able people to the field of mammalian developmental biology. Four such people featured in this session, **John Heath**, **Liz Robertson**, **Andy McMahon** and **Frank**

Constantini, together with his PhD advisor: Sir John Gurdon.

Evolution of patterning mechanisms: This gem of a session was reserved for last and featured perhaps the most unusual set of model organisms: spiders (can you imagine one of these embryos escaping!), centipedes, sea squirts, amphioxus and polychaete worms, together with a more familiar beast, the zebrafish. Using the latter, **Vicky Prince** gave an elegant account of her lab's continued efforts to identify the mechanisms underlying brain evolution. Building on her studies of the function of duplicated Hox genes in Zebrafish hindbrain patterning, Vicky's group are now analysing how duplicated neural circuits, brought about by altered hox gene expression, can be used as substrates for evolution. Misexpression of hoxb1b causes a homeotic transformation of rhombomere 2 (r2) such that ectopic Mauthner neurons form in r2 as well as in their usual position at r4. Using calcium imaging to test function and laser ablation to delete neurons, they were able to show that the ectopic neurons are fully functional and able to provide the larval fish with a startle response in the absence of endogenous r4 Mauthner neurons.

The scientific programme was enhanced this year by the easy access to the posters – the effort put into making the posters was aptly rewarded by the amount of exposure gained by the organisers scheduling tea, coffee and lunch in the poster venue, as well 2 formal poster sessions. A spot of wine tasting, the conference dinner and the boisterous Ceilidh added some culture to the full and entertaining programme enjoyed by all!

Christine Ferguson

MRC Centre for Developmental Neurobiology, KCL

Royal Society Offer

The Royal Society has recently published an issue entitled **"Epigenesis Versus Preformation During Mammalian Development,"** organised and edited by Professors **Richard Gardner**, **Davor Solter** and **Azim Surani**. The aim of the issue is to provide a review of recent findings in areas such pluripotency and lineage restriction of embryonic stem cells, Nuclear reprogramming, and Regulation of germline stem cells. Further information can be found by following the link below:

http://www.pubs.royalsoc.ac.uk/phil_trans_bio_archive.shtml

The RS is offering this issue at a discounted rate to BSDB members - £45 instead of the usual £85. For further details please contact:

royalsociety@twoten.press.net

Autumn 2004

"Organogenesis of the Nervous System"

A debate on cell interactions and growth in the nervous system using invertebrate and vertebrate model organisms.

Organisers: Alicia Hidalgo & Guy Tear

Autumn 2004

Genesis of the nervous system: a debate on cell interactions and growth using invertebrate and vertebrate model organisms

27th – 29th September 2004

University of Birmingham, UK

The aim of this meeting is to bring together researchers using Drosophila and vertebrates as model organisms to study nervous system development. By comparing findings from these model organisms, we hope to encourage a lively interaction between the two scientific communities that will enhance our opportunities to learn from each other.

The meeting will include the following sessions:
(1) Emergence of cell diversity in early neurogenesis
(2) Cell number regulation
(3) Neuron-glia and neuron-target interactions during wiring
(4) Dendrite formation and topographic maps
(5) Disease and repair

Organisers: Alicia Hidalgo and Guy Tear

Vol. 25, No. 1

British Society for Developmental Biology

Genesis of the Nervous System

Autumn Meeting 2004

Next BSBD Meeting

Genesis of the Nervous System
27th - 29th Sept 2004
University of Birmingham

Findings From Vertebrate And Invertebrate Model Organisms In The Study Of Nervous System Development

Organisers: Alicia Hidalgo and Guy Tear

PROGRAMME OUTLINE

Monday 27th September 2-6pm

Lineage and diversity in early neurogenesis
Jon Clarke (UK)
Bill Chia (Singapore & UK)
Yves-Alain Barde (Germany)

Cell number regulation: proliferation and survival
Alex Gould (UK)
Charles Ffrench-Constant (UK)
Nick Baker (USA)

Poster Session: 8-10pm

Tuesday 28th September 9-6pm

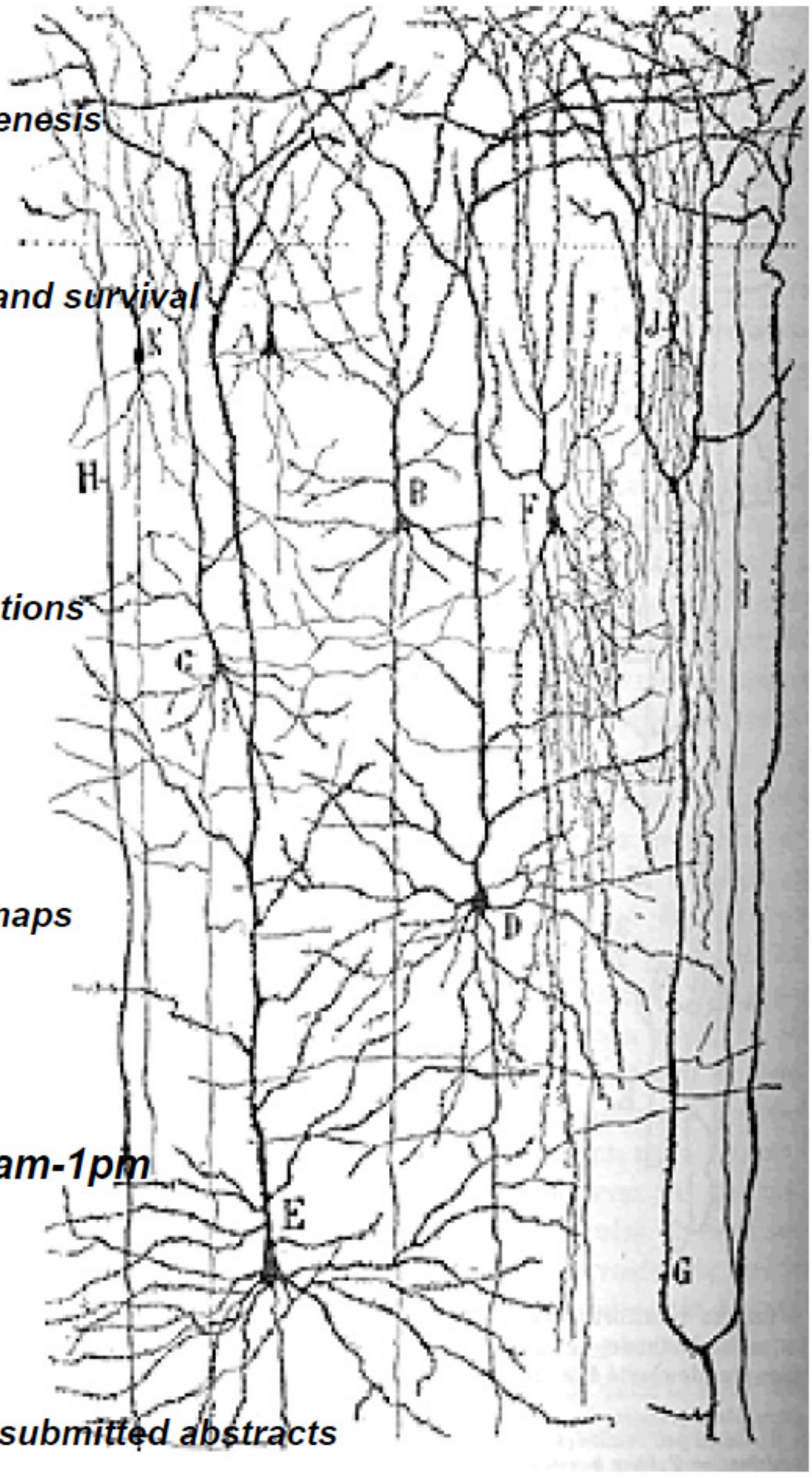
Neuron-glia and neuron target interactions
Karen Christopherson (USA)
Alicia Hidalgo (UK)
Alun Davies (UK)
Iris Salecker (UK)
Patrica Salinas (UK)
Jasprien Nordermeer (Holland)

Dendrite formation and topographic maps
Matthias Landgraf (UK)
Christine Holt (UK)
Greg Jefferis (USA)

Poster Session: 8-10pm

Wednesday 29th September 9am-1pm

Disease and repair
Amritpal Mudher (UK)
Frederic Saudou (France)
Damian Crowther (UK)
Brian Anderton (UK)
Short talks will also be selected from submitted abstracts



For further information and online registration please visit:
www.bsdb.org

Abstract Submission and Registration Deadline –
4th June 2004