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ibdg *newsletter*

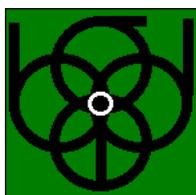
Inorganic Biochemistry Discussion Group

affiliated to:

The Royal Society of Chemistry (Dalton Division) & The British Biophysical Society

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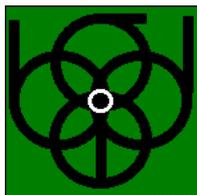
Message from the Chair

Welcome to the autumn newsletter. For many members its arrival in the mail is a reminder that the group is still active and that the annual meeting is on the horizon. We are set to convene in Manchester this January with the theme of the meeting being "Oxygen activation". I think the local organising committee have done a great job and have attracted some excellent speakers from the UK, Europe and the US. After last year's successful meeting on medicinal inorganic biochemistry we have decided to focus the upcoming meeting on metalloproteins. As such it's a return to core values and an opportunity to focus on classic inorganic biochemistry. This is set to be an exciting meeting and we are now looking for contributions from our younger members. As for previous years we may soon be in a position to offer student bursaries (details inside). It's been a good year for inorganic biochemistry with a fantastic meeting in Vienna. IBDG Manchester won't be as big as ICBIC 13 but it will be cooler. So can I encourage you all to attend, bring a poster and join in the Discussion.

Finally we are still looking for candidates for the young investigator's award so get your applications in.

John Reglinski (Chair IBDG)

j.reglinski@strath.ac.uk



The IBDG Young Investigator's Award - 2008

The Inorganic Biochemistry Discussion Group Young Investigator's Award is designed to highlight and promote the next generation of outstanding UK-based inorganic biochemists. The award is made every two years for outstanding contributions to any area of biological inorganic chemistry or inorganic biochemistry.

IBDG is therefore seeking nominations for the 2008 award. The award winner will receive a prize of £500 and present a lecture at an IBDG sponsored meeting in the following year; IBDG will pay travel and on-site costs at this meeting.

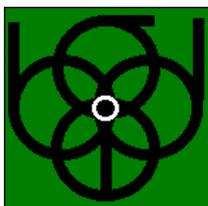
To be eligible for the award nominees must:

- normally be under the age of 35 on the 1st January 2008, although appropriate allowances will be made for career breaks
- be currently employed in the UK

Nominations for the IBDG Young Investigator's Award must be made electronically by the nominee to John Reglinski (j.reglinski@strath.ac.uk) and should include:

- a letter from the nominee which summarises their principal achievements in inorganic biochemistry or biological inorganic chemistry and which includes the names of two referees
- the nominee's current CV and list of publications, highlighting the 5 most significant
- the nominee is also responsible for arranging for electronic supporting letters from the two referees (to be e-mailed separately to John Reglinski) describing the area of work undertaken and highlighting the nominee's achievements in inorganic biochemistry or biological inorganic chemistry.

Nominations for the 2008 Award will close on December 1, 2007.



Meeting Report

European Iron Club –Annual Meeting 2007

The European Iron Club is a well-loved and venerable organisation which regroups professionals in biomedical inorganic iron research. The Annual Meeting was held at King's College London from the 13th to the 15th of September, 2007, organized by **Rob Evans** and **Bob Hider** and held in association with IBDG. As usual, it served as an interface between clinicians and fundamental bioscientists, with a heavy emphasis on the contributions of the latter to the understanding of the former, with some 170 participants enjoying an Indian summer in the attractive surroundings of the Guy's Campus of King's College. Substantial support from a number of sponsors, including the IBDG, allowed the participation of some thirty students through bursaries.

Iron and nutrition was the topic for the initial two presentations. **Sue Fairweather-Tait** summarised the role of dietary factors in the aetiology and prevention of iron deficiency anaemia, which has important functional consequences. Iron absorption from many diets among vulnerable groups of the population (notably pregnant women and young children), particularly in developing countries, is insufficient to prevent iron deficiency. There is good reason to believe that humans are not well adapted to modern diets, and that Paleolithic diets may well have been more effective in supplying dietary iron. Strategies currently being used to prevent iron deficiency include biofortification (notably by selective breeding to maximise plant ferritin), improving bioavailability by enhancers

such as EDTA, and food fortification. Information on the chemical structures of iron supplements was presented by **F.J. Lazaro**, who had used magnetic susceptibility techniques to comprehend the magnetic properties of different iron-containing species.

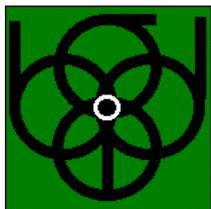
The next session was devoted to Sickle-cell disease, (**Swee Ley Thein**) (the fastest growing serious genetic disorder in many countries, including the UK) and sideroblastic anaemia (**Alison May**) where pathologic iron deposits in erythroblast mitochondria. The potential physiological role of mitochondrial ferritin was discussed by **Sonia Levi**, who concluded that it was more likely to be involved in iron detoxification and protection against oxidative damage than in iron storage. Friedreich's ataxia, the most prevalent cerebral ataxia in children and adults is characterised by deficiency of mitochondrial frataxin, a protein now known to be important in FeS assembly, and massive mitochondrial iron accumulation. **Or Kakhlon** described how frataxin deficiency led to oxidative damage and mitochondrial membrane depolarisation. In view of the accumulating evidence that redox metal ions, like iron, contribute to the oxidative stress involved in the genesis of neurodegenerative diseases, the potential use of iron chelators for the treatment of neurodegeneration was reviewed by **Bob Hider**. He described the work of his group to try to develop orally active iron chelators, capable of crossing the blood-brain barrier, but which do not inhibit key iron-containing enzymes. **Emanuela Tolosano** showed that mice in which the gene for the hemopexin had been ablated accumulated iron in brain basal ganglia. Using an elegant microdialysis technique in a rat model of Parkinson's disease, induced by 6-hydroxyl dopamine, **Roberta Ward** showed that pretreatment with the iron chelators reduced both hydroxyl radical formation and iron accumulation.

In her overview, **Martina Muckenthaler** highlighted the importance of using Cre/LoxP technology to specifically ablate HFE expression in duodenal enterocytes, macrophages and hepatocytes in order to study the role of hepcidin in the iron overload observed in genetic haemochromatosis (HFE). **Mayka Sanchez** presented studies on previously unidentified mRNAs which might have iron regulatory elements (IREs) in their untranslated regions which might interact with the well-known iron regulatory proteins (IRPs). An original and potentially powerful system for studying iron metabolism in the fruit fly, *Drosophila melanogaster*, was presented by **Fanis Missirlis**, which has the particularity of not having either HFE, hepcidin or ferroportin.

The molecular mechanism of hepcidin, acting on reticuloendothelial macrophages and duodenal enterocytes to coordinate body iron homeostasis was reviewed by **Kaila Srai**, who concluded that the effects of hepcidin, notably on ferroportin expressing cells, are tissue specific. There has been considerable interest on the role of hepcidin in the regulation of systemic iron homeostasis. The accurate determination of hepcidin levels in serum and urine are important, and several contributions addressed this question (**Erwin Kemna**, **B.A.C. van Dijk** and **S. Bansal** for serum and **S. Bansal**, **N. Camprostrini** and **Heinz Zoller** for urine). The consensus seems to be that there is still no gold standard, and indeed there may be the additional problem that the hepcidin may contain a metal ion, either copper (**Heinz Zoller**) or iron (**Sébastien Farnaud**). In his introduction to the final group of oral presentations **Andrew Goringe** reviewed the different strategies utilized by bacterial pathogens to scavenge iron from their host.

Over 70 posters were presented on different aspects of iron metabolism. First prize was awarded to G Ramey, J-C Deschemin and S Vulont from Institut Cochin and Inserm U, 567, Paris France, for a poster entitled, Induction of hepcidin synthesis by serum and holotransferrin in murine hepatocytes in primary culture. Next year's meeting will be organized by **Felix Funk** and **Peter Geisser** on the shores of the Lake of Constance in Saint Gallen, Switzerland. Information on this Meeting and information for joining the European Iron Club can be obtained on our website, www.euro-iron.org/

Prof. Roberta Ward & Prof. Robert Crichton
(Catholique University of Louvain, Belgium)



Forthcoming Meeting

January 2008 IBDG Meeting: Oxygen Activation by Metals in Biology

3 - 4 January 2008, The University of Manchester, UK

The annual Inorganic Biochemistry Discussion Group meeting will be held at the new Manchester Interdisciplinary Biocentre at The University of Manchester on 3 – 4 January 2008. The meeting will focus on the roles of metal centres in the activation of oxygen in biology.

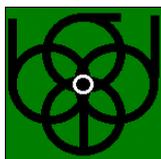
Our programme reflects the wide range of research in this area and our speakers include chemists, spectroscopists, biochemists and theoreticians. Confirmed speakers include:

Carrie Wilmot (University of Minnesota)
Carsten Krebs (Penn State)
Simon de Vries (Delft University of Technology)
Tim Bugg (Warwick)
Myles Cheesman (UEA)
Sam de Visser (Manchester)
Stuart McGregor (Heriot-Watt)
Mike McPherson (Leeds)
Martin Warren (Kent)

Registration for the meeting is open now and a Registration Form can be found at the end of the Newsletter.

Student bursaries, to cover the cost of registration, are likely to be available to those students presenting either a talk or poster at the meeting. For students that wish to be considered for a bursary please e-mail Dr Jonathan McMaster j.mcmaster@nottingham.ac.uk (with IBDG Bursary in the subject line) and don't forget to submit the abstract of your talk or poster as indicated on the application form.

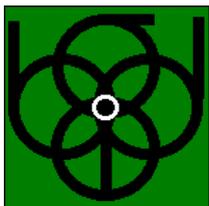
Additional details of the meeting, including the scientific programme and registration details, may be found on the IBDG website, www.ibdg.org.uk.



IBDG Committee

Chair: Dr John Reglinski, The Department of Pure and Applied Chemistry, University of Strathclyde. **Vice-Chair:** Prof. Emma Raven, Department of Chemistry, University of Leicester. **Secretary:** Dr Julea Butt (Biophysical Society Representative), School of Chemical Sciences and Pharmacy, University of East Anglia, Norwich. **Meetings Secretary:** Dr Jon McMaster, School of Chemistry, University of Nottingham. **Treasurer:** Dr Dave Evans, Biological Chemistry Department, John Innes Centre Norwich. Dr Kate Brown, Imperial College, London. Prof. Chris Cooper, University of Essex. Dr Rob Evans, King's College, London. Dr. Jeremy Harvey, University of Bristol. Prof. Andy Munro, University of Manchester. Prof. Chris Schofield, University of Oxford. Dr John Viles, Queen Mary, London.

Newsletter Edited by Julea Butt (j.butt@uea.ac.uk).



Inorganic Biochemistry Discussion Group present:
OXYGEN ACTIVATION BY METALS IN BIOLOGY
University of Manchester, 3rd – 4th January 2008

www.ibdg.org.uk

REGISTRATION DETAILS:

Title: **Name:**.....

Affiliation:

Address:

.....

.....

Tel: **Fax:** **E-mail:**

REGISTRATION FEES:

Registration Fee	£75	=
Registration Fee - IBDG Interest Group Member	£65	=
Registration Fee student	£45	=
One day registration (all categories)	£40	=
Meeting Dinner (Jan. 3)	£25	=
TOTAL		

DIETARY OR OTHER REQUIREMENTS

Details of any special dietary or other requirements:

ABSTRACTS

Abstracts for posters must be submitted before Dec 1. Please prepare abstracts in black and white.

PLEASE RETURN THIS FORM WITH YOUR CHEQUE (payable to *Inorganic Biochemistry Discussion Group*) BY 23 NOVEMBER 2007 TO:

Dr Jonathan McMaster, School of Chemistry, The University of Nottingham, University Park
Nottingham, NG7 2RD, UK

PLEASE ALSO SEND A COPY OF YOUR ABSTRACT (if applicable)

Please submit this by email (as Word file) to j.mcmaster@nottingham.ac.uk (please mark your email 'IBDG Abstract').

CHECKLIST

Registration form (by post) Cheque (by post) Abstract (sent by email)

For further information see web site: www.ibdg.org.uk