

Scientific Discussion Meeting

The molecular basis of life: is life possible without water?

Wednesday 3 December and
Thursday 4 December 2003



Synopsis

Are some biomolecular functions possible without water? Recent evidence suggests the molecular-level requirements for water have been overstated. By taking a constructively sceptical view, this meeting aims to identify the real reasons for water's biological importance. Which molecular aspects of water are functionally critical and why?

The molecular basis of life: is life possible without water?

Wednesday 3 December

Session 1

Chair Professor Marshall Stoneham
University College London

9.50 Welcome by Mr Stephen Cox
CVO, Executive Secretary of the
Royal Society

10.00 Professor Roy Daniel
University of Waikato
Introduction

10.15 Professor John Finney
University College London
Water? What's so special about it?

10.45 Discussion

11.00 Tea and coffee

Chair Dr Philip Ball
Nature

11.30 Dr Daniel Bowron
Rutherford Appleton Laboratory
Structure and interactions in
simple solutions

12.00 Discussion

12.15 Professor Jeremy Smith
University of Heidelberg
Perturbation of water at
biological interfaces

12.45 Discussion

13.00 Lunch

Session 2

Chair Professor Keith Wilson
University of York

14.15 Professor Masayoshi Nakasako
Keio University
Water-protein interactions from
high-resolution protein
crystallography

14.45 Discussion

15.00 Professor Bertil Halle
University of Lund
The dynamics of molecular
solvation

15.30 Discussion

15.45 Tea and coffee

Chair Professor Julia Goodfellow
BBSRC

16.15 Dr Nick Pace
Texas A&M University
Protein structure stability and
solubility in water and other
solvents

16.45 Discussion

17.00 Professor Watson Fuller
University of Keele
Water – DNA interactions

17.30 Discussion

17.45 Close

Thursday 4 December

Session 3

Chair Professor Felix Franks

BioUpdate Foundation

9.30 Professor Bill Grant

University of Leicester

Life at low water activity

10.00 Discussion

Chair Professor Michael Danson

University of Bath

10.15 Dr G Zaccai

Institut de Biologie Structurale

Effect of water on protein dynamics

10.45 Discussion

11.00 Tea and coffee

11.30 Dr Peter Rand

Brock University

The role of water in protein function

12.00 Discussion

Chair Professor Jonathan Dordick

Rensselaer Polytechnic Institute

12.15 Dr Peter Halling

University of Strathclyde

What can we learn by studying enzymes in non-aqueous media?

12.45 Discussion

13.00 Lunch

Session 4

14.15 Dr Douglas Clark

University of California at Berkeley

Characteristics of dry enzymes in organic solvents

14.45 Discussion

15.00 Professor Roy Daniel

University of Waikato

The use of gas phase substrates to study enzyme catalysis at low hydration

15.30 Discussion

15.45 Tea and coffee

Chair Professor John Finney

University College London

16.15 Professor Terry Lilley

University of Sheffield

So why is water biologically important?

16.30 Discussion and conclusions

17.30 Close

The molecular basis of life: is life possible without water?

Wednesday 3 December and Thursday 4 December 2003

1 I shall attend the meeting on: 3 December 4 December
(free admission)

2 I wish to book lunch on: 3 December 4 December
(lunch costs £14.50 including VAT—see note overleaf)

I enclose a cheque for £ _____ or debit this amount from my:

Access Mastercard Visa

Card no.

Expiry date: _____ Signature: _____

Please complete clearly in capital letters

Name: (Prof/Dr/Mr/Mrs/Ms/Miss) _____

Occupation/Job function: _____

Organisation: _____

Address: _____

Tel: _____ Fax: _____

Date: _____ Email: _____

Where did you hear about this meeting? _____

Note

Only the names of those presenting papers are listed within. Full authorship will appear in the published report.

The proceedings of the meeting are scheduled to be published in volume 359, issue 1448 in Philosophical Transactions of the Royal Society: Series B.

It is regretted that neither photography nor recording is permitted in the lecture hall during the meeting.

Cheques should be made payable to The Royal Society. No lunch tickets will be issued unless this form is accompanied by the necessary remittance in sterling. Payment from abroad must be by bankers' draft in sterling drawn on UK clearing bank.

The discussion meeting is free to attend, although pre-registration is essential. Those interested in attending should register online at www.royalsoc.ac.uk/events or contact Katherine Hardaker via the email address above.

Booking

All interested in the subject are welcome at the meeting. Those wishing to attend should complete the form overleaf and return it as soon as possible to the address below. Registrations will close if the capacity in the lecture theatre is exceeded.

Katherine Hardaker
Science Communication Section
The Royal Society
6–9 Carlton House Terrace
London SW1Y 5AG

For further information please email your mailing details to:
discussion.meetings@royalsoc.ac.uk

Organised by

*Professor Roy Daniel FRSNZ,
Professor John Finney and
Professor Marshall Stoneham FRS*

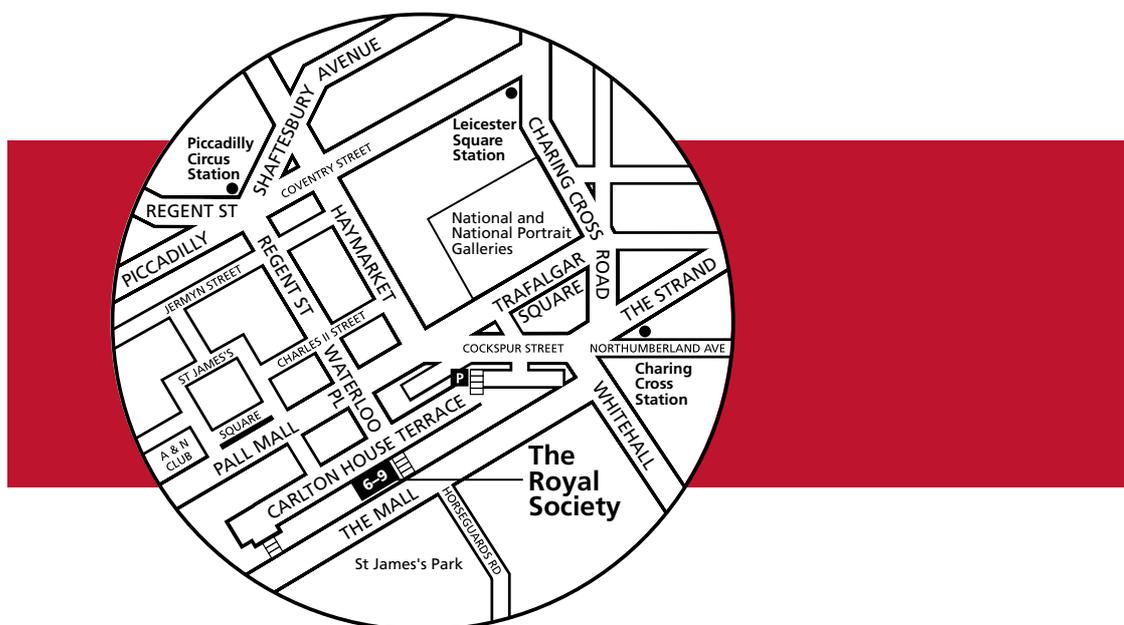
The Royal Society

6–9 Carlton House Terrace
London SW1Y 5AG

Tel +44 (0)20 7451 2518

Fax +44 (0)20 7451 2693

www.royalsoc.ac.uk/events



President Lord May of Oxford OM AC Kt PRS

Executive Secretary Stephen Cox cvo

Founded in 1660, the Royal Society
is the independent scientific academy
of the UK, dedicated to promoting
excellence in science

Registered Charity No. 207043

VAT No. GB 239 7953 11