

PROTIST 2008

Organising committee

Sina M. Adl, Alastair G.B. Simpson

Scientific committee

John Archibald, Franz Lang, Andrew Roger, Todd Smith

Conference secretary

The committee is especially thankful to Wanda Danilchuk for putting up with us helpless protistologists, and managing a variety of vital tasks.

Thank you to the volunteers who helped with work before and during the meeting:

Bruce Curtis, Natalie Donaher, Marlena Dlutek, Robert Eveleigh, Ryan Gawryluk, Daniel Gaston, Jacquie de Mestral, Aaron Heiss, Matt Hood, Eunsoo Kim, Jeremy Koenig, Martin Kolisko, Chris Kozela, Greg MacMullin, Abrar Negahban, Jong Soo Park, Michel Leger, Tia Silver, Katrin Sommerfeld, David Smith, Courtney Stairs, Tasos Tsouosis, Peter Walker.

International Society of Protistologists (ISOP)

The Society is an international association of scientists devoted to research on single-celled eukaryotes, or protists. The Society promotes the presentation and discussion of new or important facts and problems in protistology, and works to provide resources for the promotion and advancement of this science. The Society publishes the *Journal of Eukaryotic Microbiology*. Visit us at our home page for more information:

<http://www.uga.edu/~protozoa/index.html>

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Patrick Keeling, Department of Botany, University of British Columbia, Vancouver, Canada

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Laura Parfrey, Program in Organismic and Evolutionary Biology, University of Massachusetts, Amherst, USA

International Society for Evolutionary Protistology (ISEP)

The Society is an international association of scientists devoted to research on the evolutionary relationship among protists. Visit us at our home page for more information: <http://www.isepsociety.com/>

President, Julius Lukeš, Biology Centre, Institute of Parasitology, České Budějovice, Czech Republic

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European Councillor, Katrin Henze, Institut fuer Botanik III, Heinrich Heine Universitaet, Duesseldorf, Germany

Councillor-at-large, Ken-ichiro Ishida, Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan

GENERAL INFORMATION

Registration

14:00 - 17:30 Registration, FASS McCain Building lobby.
This is building "1" on the Dalhousie campus map.

Residence rooms

These are located in building "2" on the Dalhousie campus map.
Meals may be purchased in the residence cafeteria for breakfast and dinner. Lunch bags are included in your registration and they will be provided in the McCain Building lobby.

No smoking policy

Dalhousie University has a no-smoking policy on campus grounds, and inside buildings. To avoid being harassed by campus police and security, we recommend you walk to the street well away from buildings. Smoking is prohibited inside all buildings in Halifax, including restaurants and bars.

In addition, Halifax has a no-scent policy, which means no perfumes. One of its idiosyncratic oddities.

Oral Presentations

All presentations are to be in either PowerPoint or PDF format.
You need to bring a copy of your presentation on a CD or Flash disk (USB drive, memory stick, thumb drive) and have it loaded on one of the AV computers in the room in which you are speaking. You will **not** be using your own laptop for your presentation.

In preparation for loading your presentation onto the computer, please name your file as follows:
"DAY.LASTNAME.ppt" or "DAY.LASTNAME.pdf". For example, the first talk of the conference would be "22.Foissner.ppt" or "22.Foissner.pdf".

If your presentation needs to call up additional files (e.g. video files embedded in your PowerPoint show), please make sure that these files work properly and are available for transfer as well. If your files are linked into the presentation from an other file, they will not appear in your presentation. Also, please do **not** rely on having internet access available during your talk.

If you are speaking before lunch, load your talk before the morning session starts. If you are speaking after lunch, load your talk during the lunch break.

You must load your presentation onto the appropriate AV computer (PC or Mac) in advance of the session in which you are speaking. AV assistants will be on-hand to organize the uploading of talks from 8am each morning, during lunch, during the coffee breaks, and for a short period at the end of day, with the following exceptions: 1) AV assistance will be on-hand from 7:30am on the 22nd. 2) The AV assistant for the Potter Auditorium will only be available all day on the 23rd, and from lunch onwards on the 24th.

Each speaker has been allocated the time indicated in the conference program. This **includes** question time - you should allow 3 minutes for questions. Session chairs will inform you when you have a few minutes left, and will cut-off speakers who run over time.

Poster Presentations

The poster session will be in the Great Hall (the top floor of the University Club building - '4' on your Dalhousie map), on **Wednesday 23rd, between 5:00pm and 7:00pm**. There will be refreshments. Presenters are expected to remain with their posters for the duration of the poster session.

Posters must be hung prior to the poster session – during the morning coffee break or at lunchtime on Wednesday 23rd. Posters must be dismantled at the end of the poster session.

Posters must fit within 4ft x 4ft (120cm x 120cm) of board space, and will be hung two-to-a-side on each side of the supplied boards. Posters will be hung with pushpins (supplied), not velcro. There are no pre-assigned poster positions – first come, first hung!

PROTIST2008: Wireless Internet Access Instructions

WIRELESS NETWORKING ON CAMPUS

All conference registrants have been assigned an identifier called **NetID**. This **NetID** is required to access all centralized computing services on campus, including wireless networking. You will have received a slip with your unique NetID and 'set password code' along with your nametag.

GETTING STARTED:

In order to access the Wireless Network on campus you will need to do the following:

1. Ensure your computer has a compatible wireless networking card installed: Our wireless network supports 802.11b. Many new laptops have built-in support for wireless networking.
2. **Set your Password:** Once you are in a designated wireless zone, you will be able to set your password upon opening your browser. Click on the 'Change Password' link and set your password. Enter the supplied **Set Password Code** in the 'Old Password' field.
3. **Gain Access:** You must download and install the VPN Client [<http://ucis.dal.ca/services/downloads/vpn.html>] in order to access wireless on campus. Use your **NetID** and the **new password** to authenticate.

Your computer will not have access to the Campus Network or the Internet unless the VPN Client is running.

Where can I connect?

Although most buildings on campus have at least one designated wireless area, service is not available everywhere. Buildings 1-6 all include accessible Dalhousie Wireless Internet Zones, as well as the Killam Library.

Having problems connecting? If so, go to:

<http://ucis.dal.ca/services/internet/wireless/troubleshooting.html>

<http://ucis.dal.ca/helpdesk/index.html>

or call: Help Desk (Killam Library, Rm. B536, 494-2376)

Program overview

Saturday 19th and Sunday 20th
Protist Tree of Life, Lord Nelson Hotel

Monday 21st and Tuesday 22nd
International Society for Phylogenetic Nomenclature, Student Union Building room 224

Tuesday 22nd to Saturday 26th
International Society for Evolutionary Protistology and International Society of Protistologists
FASS McCain building - Scotiabank Auditorium, and Rowe building - Potter Auditorium

JEM editorial board luncheon

Tuesday 22nd, 12:30 - 14:00, University Club, Red Room, (building 4 on the campus map)

Protist art and movie night

Friday 25th, 19:30 in Scotiabank Auditorium

PROGRAM SUMMARY

Monday 21st

10:00 - 15:00 ISOP executive meeting Student Union Building rm 316
 15:00 - 17:00 ISEP executive meeting Student Union Building rm 316
 14:00 - Registration opens, FASS McCain Building lobby
 17:30 - 19:30 Welcome reception, FASS McCain Building lobby
 19:30 - Free-time for dinner

Tuesday 22nd (Scotiabank Auditorium)

8:45 - 9:00 Welcome from local organisers
 9:00 - 9:40 ISOP Past-president address
 9:40 - 12:30 Symposium I. Cellular Compartmentalisation
 12:30 - 14:00 Lunch-bag pick-up
 14:00 - 15:40 Plastids: origin and evolution
 15:40 - 16:00 Break
 16:00 - 18:00 Remnant Mitochondria
 18:00 - 19:00 ISOP business meeting
 19:20 - 22:30 ISOP student & post-doc members social
 19:00 - Free time for dinner

Wednesday 23rd

9:00 - 12:20 Protist Phylogenies (Scotiabank Auditorium)
 9:00 - 12:00 Cell Biology of Parasites (Potter Auditorium)
 12:20 - 13:40 Lunch-bag pick-up
 13:40 - 15:20 Phylogeography, new tools (Scotiabank Auditorium)
 13:40 - 16:40 Molecular Evolution (Potter Auditorium)
 15:20 - 15:40 Break
 15:40 - 16:40 Cool talks (Scotiabank Auditorium)
 17:00 - 19:00 Posters and Social (University Club, upstairs)
 19:00 - Free time for dinner

Thursday 24th

9:00 - 9:40 ISEP President's address (Scotiabank Auditorium)
 9:40 - 12:00 Symposium II. Protist Phylogenomics (Scotiabank Auditorium)
 12:00 - 13:30 Lunch-bag pick-up
 13:30 - 15:30 Amoebozoa (Scotiabank Auditorium)
 13:30 - 15:30 Symbiosis, Ecology (Potter Auditorium)
 15:30 - 15:50 Break
 15:50 - 16:50 New Protists (Scotiabank Auditorium)
 15:50 - 17:50 Cell Biology (Potter Auditorium)
 19:00 - Banquet (University Club, upstairs)

Friday 25th (Scotiabank Auditorium)

9:00 - 9:50 Invited Plenary Speaker, Michael Gray
 9:50 - 12:10 Phylogenomics
 12:10 - 13:30 Lunch-bag pick-up
 13:30 - 15:10 Diversity and Dispersal
 15:10 - 15:30 Break
 15:30 - 17:30 Protist Genomics
 17:30 - 19:00 ISEP business meeting
 19:00 - Free time for dinner
 19:30 - Protists and the arts

Saturday 26th (Scotiabank Auditorium)

9:00 - 10:20 Unusual Plastids
 10:20 - 10:40 Break
 10:40 - 13:00 Symposium III. Advances in Evolutionary Protistology
 13:00 - Meeting ends.

Tuesday 22nd

8:45 - 9:00 Welcome from local organisers (Scotiabank Auditorium)

ISOP PAST-PRESIDENT'S ADDRESS

Introduction by Sam Bowser, ISOP President (Scotiabank Auditorium)

9:00 - 9:40 Protist diversity and biogeographic distribution.
Wilhelm Foissner

SYMPOSIUM I. CELLULAR COMPARTMENTALISATION: PROTISTS DO IT THEIR WAY!

Sponsored by ISOP

Chairperson: Janet Keithly (Scotiabank Auditorium)

9:40 - 10:10 Cellular and biochemical diversity in protists: an overview
Andrew Roger

10:10 - 10:40 The role of acidocalcisomes in protozoan parasites
Silvia N.J. Moreno, and Roberto Docampo

10:40 - 11:00 Break

11:00 - 11:30 *Giardia* cyst wall secretion: complex trafficking in a simple machinery
Adrian Hehl

11:30 - 12:00 Protein trafficking to the secondary plastids: deciphering the apicomplexan solution
Marilyn Parsons

12:00 - 12:30 Hydrogenosomes and mitosomes of anaerobic protists
Mark van der Giezen

12:30 - 14:00 Lunch-bag pick-up

PLATFORM SESSION I. PLASTIDS: ORIGIN AND EVOLUTION

Chairperson: Naomi Phillips (Scotiabank Auditorium)

14:00 - 14:20 A dramatic and ancient diversity of novel planktonic eukaryotes may drive most marine photosynthesis
Colomban de Vargas, Hui Liu, Julia Uitz, Hervé Claustre and Ian Probert

14:20 - 14:40 Cyanobacterial contribution to protists lacking plastid genome
Shinichiro Maruyama, Motomichi Matsuzaki, Kazuharu Misawa, and Hisayoshi Nozaki

14:40 - 15:00 Post-endosymbiotic evolution in *Paulinella*
Hwan Su Yoon, Robert A. Andersen, Debashish Bhattacharya, Adrian Reyes-Prieto, Sung Min Boo, Ken-ichiro Ishida and Takuro Nakayama

15:00 - 15:20 Several genes for chromatophore proteins are nuclear-encoded in *Paulinella chromatophora*
Takuro Nakayama and Ken-ichiro Ishida

15:20 - 15:40 Nucleus-encoded periplastid-targeted EFL in chlorarachniophytes
Gillian H. Gile and Patrick J. Keeling

15:40 - 16:00 Break

Tuesday 22nd

PLATFORM SESSION II. REMNANT MITOCHONDRIA

Chairperson: Franz Lang (Scotiabank Auditorium)

- 16:00 - 16:20 Novel mitochondrion-like organelle in *Mastigamoeba balamuthi* (Pelobiontida)
Ivica Tamas and Andrew J. Roger
- 16:20 - 16:40 The mitochondrion-like organelle (MLO) genome of *Blastocystis*
Vicente Pérez-Brocal, C Graham Clark
- 16:40 - 17:00 Mitochondrial glycolysis in *Blastocystis*
Matthew B. Rogers, Alexandra Stechmann, Andrew J. Roger and Mark van der Giezen
- 17:00 - 17:20 The Fe/S biosynthetic pathways of *Blastocystis* sp.
Anastasios D. Tsaousis, Alexandra Stechmann, Andrew J. Roger
- 17:20-17:40 Hydrogenosomes in the anaerobic parasitic protozoan *Histomonas meleagridis*
L. R. McDougald, Michelle Brooks and A. Lorraine Fuller
- 17:40 - 18:00 Reductive evolution of processing peptidases and targeting presequences in mitosomes and hydrogenosomes
Ondrej Smid, Anna Matuskova, Simon Harris, Tomas Kucera, Marian Novotny, Lenka Horvathova, Ivan Hrdy, Robert Hirt, Martin Embley, Jiri Janata and Jan Tachezy
- 18:00 - 19:00 ISOP business meeting (Scotiabank Auditorium)
- 19:15 - 22:30 ISOP student members social (meet in the FASS McCain building lobby)
- 19:00 - Free time for dinner

Wednesday 23rd

PLATFORM SESSION III. PROTIST PHYLOGENIES

Chairperson: Vladimir Hempl (Scotiabank Auditorium)

- 9:00 - 9:20 Evolutionary development and phylogeny of oomycetes (stramenopiles)
Satoshi Sekimoto, Gordon W. Beakes and Daiske Honda
- 9:20 - 9:40 The phylogenetic diversity of holocarpic oomycete (stramenopile) parasites of nematodes
Gordon W. Beakes and Sally L. Glockling
- 9:40 - 10:00 Ribosomal and mitochondrial gene phylogenies suggest a marine origin for testate amoebae of the family Cyphoderiidae (Cercozoa: Euglyphida)
Thierry J Heger, Edward AD Mitchell, Vassil Golemansky, Milcho Todorov and Jan Pawlowski
- 10:00 - 10:20 Phylogeny, taxonomy, and genetic diversity of Glissomonadida ord. nov., the dominant gliding zooflagellates in soil (Protozoa: Cercozoa)
Alexis T. Howe, David Bass, Keith Vickerman, Ema E. Chao, and Thomas Cavalier-Smith
- 10:20 - 10:40 Comparative morphology and molecular phylogeny of marine gregarines
Sonja Rueckert and Brian S. Leander
- 10:40 - 11:00 Break
- 11:00 - 11:20 Theoretical consideration of early history of dinoflagellates: "Haploid core-dinoflagellates might have evolved from a zoospore of ancestral diploid dinoflagellates via neoteny"
Yasuhiro Fukuda, Toshinobu Suzaki and Hiroshi Endoh
- 11:20 - 11:40 Systematics of the Euglenozoa
Sarah E. Jardeleza, Christina A. Castlejohn and Mark A. Farmer
- 11:40 - 12:00 Morphological character evolution, function, and phylogeny of parabasalid and oxymonad gut symbionts of xylophagous insects
Kevin J. Carpenter and Patrick J. Keeling
- 12:00 - 12:20 Assembling the tree of eukaryotic life with the recA homologs Rad51 and Dmc1
Arthur W. Pightling and John M. Logsdon, Jr.
- 12:20 - 13:40 Lunch-bag pick-up

PLATFORM SESSION IV. CELL BIOLOGY OF PARASITES

Chairperson: Spencer Greenwood (Potter Auditorium)

- 9:00 - 9:20 Preliminary Biochemical and physiological characterization of the proteasome from *Giardia intestinalis*
Jenny J. Chaparro, George N. DeMartino, David Thompson, and Moisés Wasserman
- 9:20 - 9:40 Biological aspects of the interaction between *Acanthamoeba* spp. and extracellular matrix glycoproteins
Bruno da Rocha-Azevedo, Melissa Jamerson, Fernando C. Silva-Filho, Guy A. Cabral and Francine Marciano-Cabral
- 9:40 - 10:00 Identification of factors that induce differentiation of *Perkinsus* spp. trophozoites to hypnospores and zoosporulation
Sandra M. Casas and Jerome F. La Peyre

- 10:00 - 10:20 A novel regulatory mechanism controls nucleotide specificity in *Blastocystis* succinyl-CoA synthetase
Karleigh Hamblin, Daron M. Standley, Robin Maytum and Mark van der Giezen
- 10:20 - 10:40 Break
- 10:40 - 11:00 Nitrosylation of specific bioenergetic and encystment pathway proteins may exert metabolic control in *Giardia* and *Entamoeba*
B.Goldberg, D. Eichinger, K. M.Harris, T. Paget, H. van Keulen, E. Jarroll
- 11:00 - 11:20 Effects of serum, oxygen and a calmodulin antagonist on motile behavior of Trichomonads
Michael Levandowsky
- 11:20 - 11:40 Glycosidases from *Tritrichomonas foetus*
Joseph Sakyiama, David Perry and Pamela Greenwell
- 11:40 - 12:00 Improved Purification and Preliminary Inhibition of the Bifunctional *Entamoeba histolytica* Alcohol Dehydrogenase 2 EhADH2
George A. Perdrizet II and Avelina Espinosa

12:20 - 13:40 Lunch-bag pick-up

PLATFORM SESSION V. PHYLOGEOGRAPHY; NEW TOOLS

Chairperson: Cedric Berney (Scotiabank Auditorium)

- 13:40 - 14:00 Molecular phylogeography of *Telonemia* indicates large diversity in marine and freshwater samples.
Kamran Shalchian-Tabrizi
- 14:00 - 14:20 Molecular phylogeography of the peritrichous ciliate *Carchesium polypinum* in three Ontario river basins inferred from nuclear and mitochondrial markers
Eleni Gentekaki and Denis H. Lynn
- 14:20 - 14:40 QmmRAXML: a new phylogenetic program implementing site-specific amino acid frequencies model for phylogenetic inference
Huai-Chun Wang, Edward Susko and Andrew J. Roger
- 14:40 - 15:00 *Tetrahymena* and the molecular barcode: a new approach to species identification
Chandni P. Kher and Denis H. Lynn
- 15:00 - 15:20 Cryptosporidia on the web: iCRYPTO
Jan Slapeta

15:20 - 15:40 Break

PLATFORM SESSION VI. MOLECULAR EVOLUTION

Chairperson: Christopher Lane (Potter Auditorium)

- 13:40 - 14:00 High levels of heterogeneity of DNA content through the life cycle of *Allogromia laticollaris* (Foraminifera)
Laura Wegener Parfrey and Laura A Katz
- 14:00 - 14:20 Splicing in the microsporidian *Encephalitozoon cuniculi*: examining a link with life cycle progression
Erin E. Gill, Renny C.H. Lee and Naomi M. Fast

- 14:20 - 14:40 Secret sex in cryptic species: Population level analysis of Ichthyosporeans (Mesomycetozoa, Opisthokonta)
Wyth L. Marshall and Mary L. Berbee
- 14:40 - 15:00 Stress-induced increase in mutation rates: Mutation accumulation under salt stress in *Saccharomyces cerevisiae*
Christopher Kozela and Mark O. Johnston
- 15:00 - 15:20 Evolutionary analyses of trichomonad meiotic and housekeeping genes
Shehre-Banoo Malik and Jane M. Carlton
- 15:20 - 15:40 Break
- 15:40 - 16:00 Nucleotide diversity in the mitochondrial and nuclear compartments of *Chlamydomonas reinhardtii*: investigating the origins of genome architecture
David R Smith and Robert W Lee
- 16:00 - 16:20 Evolution of germline-limited sequences in a ciliate with extensive chromosomal fragmentation
Brian C. Mahon and Rebecca A. Zufall
- 16:20 - 16:40 Mitochondrial small subunit ribosomal DNA as a molecular marker for higher-level systematics in colpodean and spirotrich ciliates
Micah Dunthorn and Laura A. Katz

PLATFORM SESSION VII. COOL STUFF

Chairperson: Brian Leander (Scotiabank Auditorium)

- 15:40 - 16:00 The surface patterns of the euglenid pellicle as a model system for cytoskeletal development and evolution in unicellular eukaryotes
Heather J. Esson and Brian S. Leander
- 16:00 - 16:20 Photomovement features of an epineustonic chrysophyte alga, *Chromophyton rosanoffii* (Heterokontophyta)
Mina Nomizu, Shigeru Matsunaga, Masakatsu Watanabe and Isao Inouye
- 16:20 - 16:40 How do cells know how big they are?
Sina Adl

17:00 - 19:00 Posters and Social (University Club, upstairs)
See the list of poster titles in this program.

19:00 - Free time for dinner

Thursday 24th

ISEP PRESIDENT & ISOP VICE-PRESIDENT ADDRESS

Introduction: Alastair Simpson (Scotiabank Auditorium)

9:00 - 9:40 About socialist and capitalist protistology, but mostly about the kinetoplastid mitochondrion
Julius Lukes

SYMPOSIUM II. PROTIST PHYLOGENOMICS

Sponsored in part by the Centre for Comparative Genomics and Evolutionary Bioinformatics (Dalhousie University)

Chairperson: Andrew Roger (Scotiabank Auditorium)

9:40 - 10:10 The Origin of Eukaryotic Core Genes from Archaeobacteria?
Martin Embley

10:10 - 10:40 Accessory genes in microbial eukaryotes
Jan O. Andersson

10:40 - 11:00 Break

11:00 - 11:30 Protist EST program in Tsukuba (PETIT): Similar to but smaller than PEP by Genome Canada/ Genome Atlantic
Yuji Inagaki, Kiyotaka Takishita, Tadashi Maruyama, Akinori Yabuki, Ken Ichiro Ishida, Naoji Yubuki, Isao Inouye, Miako Sakaguchi, and Tetsuo Hashimoto

11:30 - 12:00 Evolution of the Apicomplexan Genome
Jessica C. Kissinger and Chih-Horng Kuo

12:00 - 13:30 Lunch-bag pick-up

PLATFORM SESSION VIII. SYMBIOSIS, ECOLOGY

Chairperson: Klaus Hausmann (Potter Auditorium)

13:30 - 13:50 Symbioses between termite-gut protists and their associated bacteria
Moriya Ohkuma, Satoko Noda and Yuichi Hongoh

13:50 - 14:10 An overview of symbiont-bleaching in the epiphytic foraminiferan *Sorites dominicensis*
Susan L. Richardson

14:10 - 14:30 Ecology of the soritid foraminifer / *Symbiodinium* symbiosis
Scott A. Fay and Michele Weber

14:30 - 14:50 Continuing progress in characterizing *Symbiodinium* and their soritine foraminifera hosts
John J. Lee, Jorge Morales, Raul Daniels, Megan Cervasco, Morgan Billick, Sophie Dove, Oren Levy, Maoz Fine, Eugene Vessel, Tricia Hall, Daniel Fimiarz and Geraldo Medior

14:50 - 15:10 The role of free-living amoebae in the environmental reservoir of *Mycobacterium ulcerans*
Miriam Eddyani, Johan F. De Jonckheere, Egidio Torrado, Humberto Guerra, Lies Durnez, Patrick Suykerbuyk, Herwig Leirs, Jorge Pedrosa, Manuel T. Silva, Françoise Portaels

15:10 - 15:30 Effects of interaction of *Acanthamoeba polyphaga* with fungi and bacteria isolated from moisture-damaged buildings
Terhi Yli-Pirilä, Jaana Kusnetsov, Kati Huttunen, Markku Seuri, Maija-Riitta Hirvonen and Aino Nevalainen

15:30 - 15:50 Break

Thursday 24th

PLATFORM SESSION IX. AMOEBOZOA

Chairperson: Gertraud Burger (Scotiabank Auditorium)

- 13:30 - 13:50 What is an amoeba species: morphospecies concept vs molecular operational taxonomic unit
Alexey Smirnov
- 13:50 - 14:10 Towards a multigene phylogeny of Amoebozoa: 1. Monophyly of Amoebozoa and phylogenetic placement of several genera incertae sedis
Cédric Berney, Anna Maria Fiore-Donno and Thomas Cavalier-Smith
- 14:10 - 14:30 Towards a multigene phylogeny of Amoebozoa: 2. Relationships between the major lineages and evolutionary pathways within the phylum
Anna Maria Fiore-Donno, Cédric Berney and Thomas Cavalier-Smith
- 14:30 - 14:50 The consequences of treating slime molds as amoebae.
Frederick W. Spiegel, Lora Shadwick and Matthew W. Brown
- 14:50 - 15:10 A survey for *Entamoeba* reveals a wealth of diversity
Jeffrey D Silberman and Clark S Smith
- 15:10 - 15:30 Phylogeny of the genus *Cochliopodium* (Amoebozoa) based on the ultrastructure and gene sequence data
Alexander Kudryavtsev and Jan Pawlowski

15:30 - 15:50 Break

PLATFORM SESSION X. CELL BIOLOGY

Chairperson: John Kloetzel (Potter Auditorium)

- 15:50 - 16:10 Basal body formation for the thigmotactic field of *Conchophthirus*
Gregory A. Antipa and Eddie Chang
- 16:10 - 16:30 Parafusin and the secretory pathway
Birgit H. Satir and Li Liu
- 16:30 - 16:50 GEFs in ciliary evolution
Peter Satir, Aashir Awan and Aaron Bell

PLATFORM SESSION XI. NEW PROTISTS

Chairperson: Alexey Smirnov (Scotiabank Auditorium)

- 15:50 - 16:10 The ultrastructure of *Ancyromonas*, a eukaryote without supergroup affiliation
Aaron A. Heiss, Giselle Walker and Alastair G. B. Simpson
- 16:10 - 16:30 *Palpitomonas bilix* gen. et sp. nov., a novel protist related to cryptophytes.
Akinori Yabuki and Ken-ichiro Ishida
- 16:30 - 16:50 The isolation and identification of three extremely halophilic Heterolobosea from high salinity waters
Jong Soo Park, Byung Cheol Cho, and Alastair GB Simpson

- 16:50 - 17:10 Cellular identity of a diverse group of deep sea, anoxic euglenozoans with epibiotic bacteria: Ultrastructure and molecular phylogeny of *Calkinsia areaus* from the Santa Barbara Basin
Naoji Yubuki, Virginia P. Edgcomb, Joan M. Bernhard and Brian S. Leander
- 17:10 - 17:30 Molecular phylogeny of new *Carpediemonas*-like organisms
Martin Kolisko, Jong Soo Park, Jeffrey D. Silberman, Andrew J. Roger, and Alastair G.B. Simpson
- 17:30 - 17:50 Episymbioses involving three new genera of heterotrophic Stramenopiles flagellates: *Apoikia lindahli* nov. comb. (Chrysophyceae), *Filos agilis* gen. et sp. nov. (Bicosoecida), and *Nanos amicus* gen. et sp. nov. (Bicosoecida)
Eunsoo Kim, Naoji Yubuki, Brian Leander and Linda E. Graham
- 19:00 -- Banquet (University Club, upstairs)

Friday 25th

INVITED PLENARY SPEAKER

Introduction: John Archibald (Scotiabank Auditorium)

9:00 - 9:50 Spectacular and bizarre: RNA editing and its evolution in protists
Michael W. Gray

PLATFORM SESSION XII. PHYLOGENOMICS

Chairperson: Ivan Cepicka (Scotiabank Auditorium)

9:50 - 10:10 Eukaryotic evolution from a mitochondrial genome perspective
B. Franz Lang, Lise Forget and Gertraud Burger

10:10 - 10:30 Assessing multi-gene candidates for an algal heterokont phylogeny
Robert K Jansen, Elizabeth Ruck, Matt P. Ashworth, Teofil Nakov, Cai Zhengqiu, Edward Theriot, Robert Andersen, Mathew Julius, Stefano Draisma, Hiroshi Kawai

10:30 - 10:50 Break

10:50 - 11:10 Phylogenomic investigations within Brown Algae
Naomi Phillips, Ed Braun, Ahmed Moustafa and Debashish Bhattacharya

11:10 - 11:30 Phylogenomics reveals a new 'megagroup' including most photosynthetic eukaryotes
Fabien Burki, Kamran Shalchian-Tabrizi and Jan Pawlowski

11:30 - 11:50 Taxon-rich Phylogenomic Analyses Support the Monophyly of Excavata and Robustly Resolve Relationships among Eukaryotic "Supergroups"
Vladimir Hampl, Laura Hug, Jessica W. Leigh, Joel B. Dacks, B. Franz Lang, Alastair G.B. Simpson and Andrew J. Roger

11:50 - 12:10 Expressed sequence tags of the reticulose marine protozoan 'Filoreta' (Endomyxa, Cercozoa) and a phylogenomic analysis of Rhizaria
Rhodri Lewis and Thomas Cavalier-Smith

12:10 - 13:30 Lunch-bag pick-up

PLATFORM SESSION XIII. DIVERSITY AND DISPERSAL

Chairperson: Wayne Coats (Scotiabank Auditorium)

13:30 - 13:50 On the temporal dynamics of spatial diversity patterns - protistan communities in the anoxic Framvaren Fjord.
Anke Behnke, Kathryn J. Barger, John Bunge and Thorsten Stoeck

13:50 - 14:10 Microsatellites, DNA barcodes, morphology and mating concur: dispersal limitation of diatoms is likely, some species are genuinely widely distributed, cryptic speciation undermines morphology-based surveys, and diatoms are incredibly speciose.
David G. Mann, Katharine M. Evans, Victor Chepurinov and Pieter Vanormelingen

14:10 - 14:30 The Diversity and Ecology of 'Planomonas' Zooflagellates (Apusozoa)
Edvard Glücksmann and Thomas Cavalier-Smith

14:30 - 14:50 Dispersal in Benthic Foraminifera: Dynamics of the "Propagule Bank."
Susan T. Goldstein and Elisabeth Alve

14:50 - 15:10 Eukaryotic and bacterial microbial communities associated with the rhizosphere of the invasive fern *Thelypteris noveboracensis* (L.) widely distributed in eastern North America from Nova Scotia and N. E. Canada to southeastern U.S.A.
O. Roger Anderson

15:10 - 15:30 Break

Friday 25th

PLATFORM SESSION XIV. PROTIST GENOMICS

Chairperson: Jeffrey Silberman (Scotiabank Auditorium)

- 15:30 - 15:50 Analysis of foraminiferal genomic DNA using 454 sequencing
Andrea Habura, Daniel R. Rosen, and Samuel S. Bowser
- 15:50 - 16:10 Pyrosequencing the A+T-rich nucleomorph genomes of the cryptophyte algae *Rhodomonas* sp. 1178 and *Cryptomonas paramecium*: insight into the pattern and process of nuclear genome reduction
Natalie Donaher, Christopher E. Lane, Stephanie A. Malfatti, Patrick Chain, and John M. Archibald
- 16:10 - 16:30 Origin and evolution of the cryptophyte nucleomorph proteome
Christopher E. Lane, Bruce A. Curtis and John M. Archibald
- 16:30 - 16:50 Big business. New insights into dinoflagellate genomes
Claudio Slamovits and Patrick Keeling
- 16:50 - 17:10 Comparative genomics of stichotrichous ciliates
Estienne Swart, Yi Zhou, Thomas Doak, Hans Lipps, Sean Eddy, Vincent Magrini, Elaine Mardis and Laura Landweber
- 17:10 - 17:30 High gene order conservation between the mating type locus of *Phycomyces blakesleeanus* (Zygomycota) and three microsporidian parasites may reveal a fungal like sexual reproduction in the microsporidia and a close evolutionary link with zygomycetes
Nicolas Corradi, Donna Akiyoshi, Hillary Morrison, Soo Chan Lee, Joseph Heitman and Patrick J. Keeling
- 17:30 - 19:00 ISEP business meeting (Scotiabank Auditorium)
- 19:00 -- Free time for dinner

Saturday 26th

PLATFORM SESSION XV. UNUSUAL PLASTIDS

Chairperson: Shehre-Banoo Malik (Scotiabank Auditorium)

- 9:00 - 9:20 Evidence for a vestigial plastid genome in oomycetes
J. Craig Bailey, Kristi M. Sommer Chris Lane
- 9:20 - 9:40 DNA-lacking plastid in an oyster pathogen *Perkinsus marinus*
Motomichi Matsuzaki, Haruko Kuroiwa, Tsuneyoshi Kuroiwa, Hisayoshi Nozaki and Kiyoshi Kita
- 9:40 - 10:00 Photosynthetic ancestry of Apicomplexa
Miroslav Oborník, Jan Janouškovec, Tomáš Chrudimský, Marie Vancová, Robert B. Moore, Simon Wright and Noel Davies
- 10:00 - 10:20 The plastid genome of *Chromera velia*
Jan Janouskovec, Miroslav Obornik, Julius Lukes and Patrick J. Keeling

10:20 - 10:40 Break

SYMPOSIUM III. ADVANCES IN EVOLUTIONARY PROTISTOLOGY: HONOURING THE CONTRIBUTIONS OF TOM CAVALIER-SMITH

Sponsored by the Tula Foundation through the Centre for Microbial Diversity and Evolution, University of British Columbia, Vancouver, Canada

Chairperson: Patrick Keeling (Scotiabank Auditorium)

- 10:40 - 10:50 Introductory remarks
Ford Doolittle
- 10:50 - 11:20 Chromalveolates and the evolution of plastids by secondary endosymbiosis
Patrick J. Keeling
- 11:20 - 11:50 Nucleomorphs and protein trafficking
Uwe Maier
- 11:50 - 12:20 Untangling the phylogeny of amoeboid protists
Jan Pawlowski
- 12:20 - 13:00 Megaphylogeny, cell body plans, adaptive zones, and eukaryote radiation
Thomas Cavalier-Smith

13:00 - Concluding remarks, Patrick Keeling.
Meeting ends.

LIST OF POSTERS

(in alphabetical order by first author)

RNA Editing and Topogenic Signals in *Ceratium horridum*

Andrew S. Bozarth, Susanne Lieske, and Stefan Zauner

A simple framework for maximum likelihood and Bayesian analyses of amino acid alignments

Edward L. Braun

Evaluating Lindsay Olive's acrasids

Matthew W. Brown, Jeffrey D. Silberman, and Frederick W. Spiegel

Molecular characterization of *Neoparamoeba pemaquidensis*, a parasite implicated in the mass mortality of Long Island Sound lobsters in 1999

Charles G.B. Caraguel, Charles J. O'Kelly, Pierre Legendre, Salvatore Frasca Jr., Rebecca J. Gast, Béatrice Després, Nathanaelle Donay, Richard J. Cawthorn, Spencer J. Greenwood

Increasing the in vitro proliferation rate of *Perkinsus mediterraneus*, a parasite of the european flat oyster *Ostrea edulis*

Sandra M. Casas, Yanli Li and Jerome F. La Peyre

Use of the covarion model of evolution to resolve relationships within the Excavates

Christina Castlejohn, Jim Leebens-Mack, and Mark A. Farmer

Genetic diversity in the *Paramecium aurelia* species complex

Francesco Catania, François Wurmser, Alexey A. Potekhin, Ewa Przyboś, and Michael Lynch

Morphological and genetic diversity of marine interstitial cercozoans as inferred from small subunit rRNA gene sequences

Chitchai Chantangsi and Brian S. Leander

Investigating non-canonical introns of *Gregarina niphandrodes*

Adrienne Copeland and Charlotte Omoto

The University of Massachusetts History of Protistology Special Collection

Michael F. Dolan and Robert S. Cox

Evolution of the alpha subunit of heterotrimeric G-proteins, key components of eukaryotic signal transduction pathways

Marek Elias, Vladimir Nerandzic

A Likelihood Based Mixture Model Method of Identifying Functionally Divergent Protein Residues

Daniel Gaston and Andrew J. Roger

Expression of proteins after exposure to organic and inorganic toxicants by *Tetrahymena pyriformis*

Didier Gauthier, Levon Fendekian, Samuel Gionet

An ERAD-derived preprotein translocator in the periplastid compartment of chromalveolates?

Franziska Hempel, Lars Bullmann, Kathrin Bolte and Uwe-G. Maier

Centre of Excellence for Dinophyte Taxonomy (CEDiT) – heard about it yet?

Mona Hoppenrath and Malte Elbrächter

Phylogeny and character evolution in dinoflagellates with complex organelles as inferred from SSU and LSU ribosomal gene sequences

Mona Hoppenrath, Tsvetan R. Bachvaroff, Sara Handy, Charles F. Delwiche and Brian S. Leander

Protein targeting into chlorarachniophyte plastids

Yoshihisa Hirakawa and Ken-ichiro Ishida

Comparative functional genomics of nucleomorph

Horak A., Slamovits C., Lane C., Patron N.J., Archibald J.M. and Keeling P.

Differentiation of primary metabolisms of symbiotic parabasalids in the termite gut

Jun-ichi Inoue, Sadaharu Ui, Moriya Ohkuma

Species identification of asexual green euglenoids

Anna Karnkowska, Sylwia Kosmala, Rafał Milanowski and Bożena Zakryś

Escherichia coli* stress gene expression decreases when *E.coli* is symbiotically cultured with *Dictiostelium discoideum

Kumiko KIHARA, Kotaro MORI, Ono Naoaki, Shingo SUZUKI, Akiko KASHIWAGI, Chikara FURUSAWA and Tetsuya YOMO

Unprecedented mitochondrial genomes throughout diplomonids

Georgette N. Kiethega, Shona Teijeiro, Joannie Roy and Gertraud Burger

Life cycle and phylogeny of an ectoparasitic dinoflagellate from the ciliate *Tintinnopsis cylindrica*

Sunju Kim, Tsvetan R. Bachvaroff, Chuck F. Delwiche and D. Wayne Coats

Effect of endosymbioses and horizontal gene transfer on the evolution of heme biosynthesis in eukaryotes: Rescue of the heme biosynthesis by novel endosymbiosis in trypanosomatids

Ludek Koreny, Miroslav Obornik, Julius Lukes

A contribution to the understanding of relationship within the Radiatae (*Euglenaceae*) in the light of morphological and molecular data

Sylwia Kosmala, Anna Karnkowska, Rafał Milanowski and Bożena Zakryś

Characterizing patterns of inheritance of protein coding genes in the ciliate *Chilodonella uncinata*

Alexandra M.B. Kovner, Jennifer R. DeBerardinis, Laura A. Katz

Ultrastructure and phylogeny of a novel tube-forming, intracellular parasite of dinoflagellates: *Parvilucifera proocentri* sp. nov. (Alveolata, Myxozoa)

Brian S. Leander and Mona Hoppenrath

The mitochondrion-derived organelle of *Andalucia incarcerata*

Michelle M. Leger, Laura Hug and Andrew J. Roger

Phylogenetic reevaluation of highly ambiguous ciliate, *Protocruzia* (Protozoa: Ciliophora): based on multigene analyses, with suggestion of establishment of a new class Protocruziidea n. cl.

Lifang LI, Weibo SONG, Thorsten STOECK and Mann Kyoong SHIN

A new scuticociliate associated with coral Brown Band Disease in Guam

Christopher S. Lobban, Laurie J. Raymundo and David. J.S. Montagnes

Evolutionary relationships of eukaryotes inferred with the largest subunit of RNA polymerase II

Shehre-Banoo Malik, Jing Yuan, Cindy D. Brochu, Glenn J. Morse, Kate R. McKiernan, Nevin Sebastian, Joel B. Dacks, John M. Logsdon Jr.

Katablepharid EFL possess the evolutionary affinity to the homologues of chlorarachniophytes, foraminiferans, and diatoms

Takuya Matsumoto, Miako Sakaguchi, Akinori Yabuki, Tetsuo Hashimoto, Yuji Inagaki

Evolutionary position of breviate amoebae illuminates the primary eukaryote divergence

Marianne Aastebøl Minge, Jeffrey D. Silberman, Russell J.S. Orr, Thomas Cavalier-Smith, Kamran Shalchian-Tabrizi, Fabien Burki, Åsmund Skjæveland and Kjetill S. Jakobsen

Cloning of *Tetrahymena* cells using fluorescence activated cell sorter

Kotaro Mori, Akiko Kashiwagi and Tetsuya Yomo

Conjugation-specific expression of *GRP94* homologue (*PcGRP92*) in *Paramecium caudatum* is regulated by a short element located within the coding region

Sanae Nakayama, Manabu Hori, Hiroki Sugimoto and Hiroshi Endoh

Molecular phylogeny of parabasalids in the termite gut inferred from multi-gene sequences

Satoko Noda, Eric Viscogliosi, Moriya Ohkuma

Characterization of mitosomes in *Mastigamoeba balamuthi*

Eva Nyvltova, Ivan Hrdy, Iva Dykova and Jan Tachezy

Live imaging of apicoplast and mitochondrion in the asexual cell and the gametocyte of *Plasmodium falciparum*

Noriko Okamoto, Christopher D. Goodman, Timothy P. Spurck, Geoffrey I. McFadden

New members of the heterolobosean anaerobic clade

Tomáš Pánek, Jeffrey D. Silberman, Ivan Čepička

Molecular complementarities may facilitate mate choice in ciliates

Sujal Phadke and Rebecca A. Zufall

Dating of eukaryotic evolution based on phylogenomic datasets and multiple calibration intervals

Hervé Philippe, Henner Brinkmann, Frederic Delsuc, Denis Baurain, Naiara Rodríguez-Ezpeleta, Emmanuelle J. Javaux and Emmanuel J. Douzery

Species concept within Foraminifera: first insights into DNA taxonomy of the genus *Elphidium* in relation to morphology and symbiosis

Loïc Pillet and Jan Pawlowski

Composition of the peritrich (Ciliophora, Peritrichia) community in two artificial lakes in southern Brazil

Lúcia S.L. Safi, Laura R. P. Utz, Roxane Freire Duarte, Douglas Senna Engelke, Eduardo Eizirik

Updating the distribution of elongation factor-like genes in eukaryotes

Miako Sakaguchi, Kiyotaka Takishita, Takuya Matsumoto, Tetsuo Hashimoto, and Yuji Inagaki.

How similar are morphological and genetic diversities recognizable on a typical plankton filter?

Magali Schweizer, Hans R. Thierstein, Hartmut Schulz and Kate Darling

Ciliate community analysis of agricultural soil based on SSU rDNA with new taxon-specific primer

Satoshi Shimano, Mitsuo Sanbe, Tunjung Puitika and Yasuhiro Kasahara

Characterization of the citric acid cycle enzyme succinyl-CoA synthetase of the aquatic chytridiomycete *Blastocladiella emersonii*

Maria A. Siegesmund, Thomas A. Richards and Mark van der Giezen

Chlorarachniophyte nucleomorphs: big surprises in small genomes

Tia D. Silver and John M. Archibald

The mitochondrial and chloroplast genomes of *Volvox carteri*: molecules rich in noncoding DNA that share a common repeat element with the nuclear compartment

David R. Smith and Robert W Lee

Anoxicity structures microbial eukaryote communities in the anoxic Gotland Deep

Alexandra Stock, Klaus Jürgens and Thorsten Stoeck

Barcoding of ciliates – a comparison of the molecular markers COI and ITS

Michaela C. Strüder-Kypke and Denis H. Lynn

Origins of plastids and nuclear-encoded plastid-targeted proteins in the green-colored dinoflagellate

Lepidodinium chlorophorum

Kiyotaka Takishita and Yuji Inagaki

Analysis of mitochondria and the *cox1* gene in *Gregarina niphandrodes*

Marc A. Toso and Charlotte K. Omoto

A novel route for ATP acquisition by the remnant mitochondria of *Encephalitozoon cuniculi*

Anastasios D. Tsaousis, Edmund R. S. Kunji, Alina V. Goldberg, John M. Lucocq, Robert P. Hirt and T. Martin Embley

A unique feature of the mitochondrial protein import machinery in *Blastocystis*

Peter Walker, Anastasios D. Tsaousis, Andrew J. Roger

Symbiosis with dinoflagellates and *Tetraselmis* spp. in littoral acoel flatworms

Aika Yamaguchi, Satoko Sekida, Masashi Tsuda and Takeo Horiguchi

Ultrastructure and molecular phylogeny of *Stephanopogon minuta*: an enigmatic microeukaryote from marine interstitial environments

Naoji Yubuki and Brian S. Leander

DNA content, cell size, karyotypes and the evolution of trichomonad genomes

Zuzana Zubacová, Zdenek Cimburek, Jan Tachezy

	Mon 21	Tue 22	Wed 23	Thur 24	Fri 25	Sat 26	
08:00							
08:20							
08:40		Welcome					
09:00		ISOP past President address	Cell biology	Protist phylogenies	ISEP President	MIKE GRAY PLENARY	Unusual plastids
09:20							
09:40		Cellular compartmentalisation			Protist Phylogenomics	Phylogenomics	
10:00							
10:20		Coffee	Coffee	Coffee	Coffee	Advances in evolutionary	
10:40						Coffee	
11:00		Cellular compartmentalisation	Cell biology	Protist phylogenies	Protist Phylogenomics	Phylogenomics	protistology in honour of Cavalier-Smith
11:20							
11:40							
12:00							
12:20							
12:40							
01:00		Lunch	Lunch	Lunch	Lunch		
01:20						Meeting Ends	
01:40							
02:00	Registration	Plastids	Phylogeography; tools	Molecular evolution	Symbiosis, ecology	Amoebozoa	Diversity and dispersal
02:20							
02:40							
03:00			Coffee	Coffee	Coffee	Coffee	
03:20							
03:40							
04:00		Remnant mitochondria	Cool talks	Molecular evolution	Cell biology	New protists	Genomics
04:20							
04:40							
05:00			Posters				
05:20							
05:40							
06:00	Social Mixer McCain Foyer				***Gap***	ISEP Business Meeting	
06:20		ISoP Business Meeting			***Gap***		
06:40							
07:00							
07:20							
07:40							
08:00	Free evening for dinner	ISOP student social	Free evening	Banquet		Protist movie night	
08:20							
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