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Important numbers

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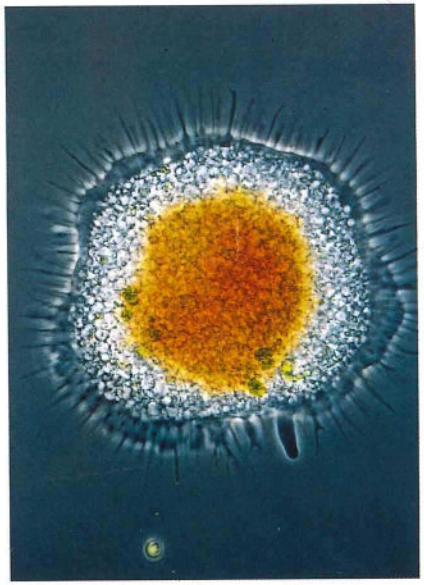
Venue of the Congress
Internationales Congress Centrum (ICC)
Messedamm 22, 14055 Berlin

Hotline after your arrival in Berlin
838 64 75

1658

IX INTERNATIONAL CONGRESS OF PROTOZOOLOGY



PROGRAM

Organizing Committee

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G. Piekarski, Bonn †

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H. Mehlhorn, Bochum

Vice Presidents:
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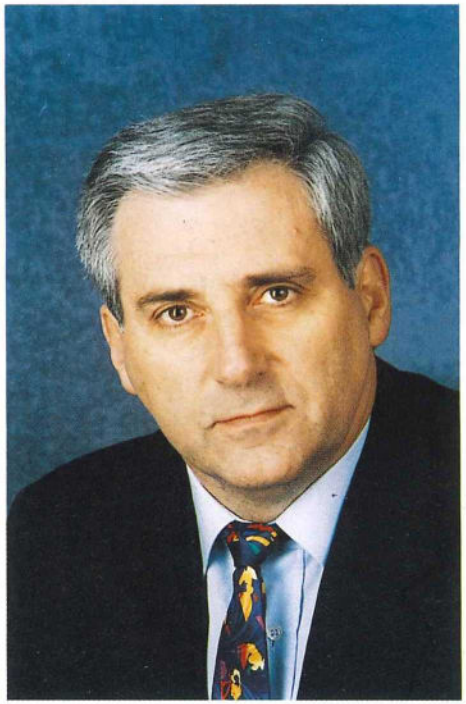
Steinert M., Belgium
Vickerman K., United Kingdom
Raikov I. B., GUS
Skarlato S. O., GUS
Yunfen Shen, P. R. China

Dear Colleagues from all over the world,

On behalf of the Organizing committee and especially on behalf of the International Committee of Protozoology and all members of the German Societies of Protozoology and Parasitology I welcome you heartily here in Berlin at the International Congress of Protozoology. This is the 9th Congress of a series to be held every four years in another continent of our world that is faced by numerous problems due to protozoans.



In 1989 during the 8th Congress in Tsukuba (Japan) when we were asked to organize the next Congress, we chose Berlin as the meeting place. This was in the months preceding the sudden and unpredictable fall of the Berlin Wall with all the subsequent events and problems. Berlin was chosen in part with the thought of enabling as many colleagues as possible from Eastern countries to participate in this congress. However, now with the dramatic changes in this part of the world it has become difficult to have even a few of them among us.

Since Tsukuba many problems in the field of Protozoology have increased as a result of ecological, economical or epidemiological reasons and thus I am pleased to have you here to discuss your recent results and potential solutions in more than sixty scientific sessions.

I wish that this congress will be a fruitful one and that you will share with us some pleasant days here in Berlin our cultural and political capital.

Prof. Dr. Heinz Mehlhorn
President of the Congress

Greeting Address

Parasitic diseases cause considerable problems all over the world in health care systems and in other areas of national economies.

The introduction of modern biochemical and molecular biological technology in the carrying out of research on parasitic diseases has in recent years led to a considerable expansion of scientific knowledge.
This research makes fundamental contributions to the further development of immunology and Aids in developing means of prevention and therapy.

An active worldwide exchange of knowledge and experience and a rapid presentation and documentation of recent research are the prerequisites for a continued development of methods for prevention and control.

In this connection the Ninth International Conference on Protozoology will constitute a significant contribution. To the participants who have come from 100 countries to attend this conference I extend my sincere best wishes and trust that they will have interesting discussions and a pleasant stay in Berlin.

Horst Seehofer
Minister of Health of Germany

Message of Greeting by the Governing Mayor of Berlin, Eberhard Diepgen, to the 9th International Protozoology Congress in Berlin 1993

I welcome the participants to the 9th International Protozoology Congress most warmly to our city.

Berlin owes its advance to the position of a European city of industry and science during the last century above all to technological and scientific progress. This includes research in the field of protozoology, whose 175-year history is documented in an exhibition within the framework of the international congress.

Today, Berlin, with its 300 research institutions again has a central place in European science. The city sees one of its roles as being a centre of exchange for science, business and culture.

Since the fall of the Wall, however, Berlin has also been the place where the consequences of the decade-long division of our continent are particularly evident. At the same time, the steps to unity are most clearly visible here. As in a burning glass, the problems and opportunities of the change are focused here in a fascinating perspective.

I wish all our city's guests a pleasant and stimulating stay and hope that you will catch some of the atmosphere of the transition and construction in Berlin and take it home with you.

Eberhard Diepgen
Governing Mayor of Berlin

Welcoming address given by Ms Anke Brunn, North Rhine-Westphalia Minister of Higher Education and Research, to the Ninth World Congress on Protozoology, held in Berlin between July 25 and August 1, 1993

Talks between friends is one thing – entertaining, leisurely, inspiring; talks between professionals the other thing – entertaining, inspiring, compelling. Talking with fellow professionals can be much like talking with friends: you never run out of interesting subjects; the same language is spoken even in an international environment; the right questions – leading to new enlightening answers – are asked.

My wishes for the 9th World Congress on Protozoology are that participants will perceive the Congress as a successful blend of enlightenment and entertainment.

It seems that understanding the single-cell organisms of **Protozoa** leads directly toward an identification of the basic mechanisms of life.

Few protozoa cause disease in humans (and animals as well). Among them, **Plasmodium falciparum** is probably the most dangerous one, as it is responsible **for malaria tropica**. More than one million people die of it each year!

I am sure you will succeed in finding powerful therapies against malaria. Indeed, the strength of your congress is the combination of pure and applied science, is the cooperation of biologists, physicians, chemists and physicists. Such cooperations are prerequisite for a real progress in science.

I should add that the government of North Rhine-Westphalia strongly supports projects based on the principles of cooperation and innovation.

I am sure that during these days you will develop new exciting ideas and enter into stimulation new collaborations.

Anke Brunn
Minister of Higher Education and Research in NRW

I welcome the participants of the 9th International Congress on Protozoology most warmly to the German capital. I am pleased that the German Society for Protozoology has been successful in organising this conference, which is held every four years, in Germany for the first time and that more than 1,000 scientists from all over the world have accepted the invitation to come to Berlin. I particularly welcome those guests from the countries of central and eastern Europe, for whom the process of growing together of formerly different scientific systems in our once divided city will be especially vivid. Berlin wants to build on its former reputation as a scientific metropolis of international standing and, with united resources, has a good chance of achieving this.

I hope that you will all be able to form an impression of the broad range of activities of our universitary and non-university research institutions. Like science, culture is also one of Berlin's strong points and I hope that you will be able to find time for this in addition to your congress work.

International and interdisciplinary cooperation are the means to success in effective research work.

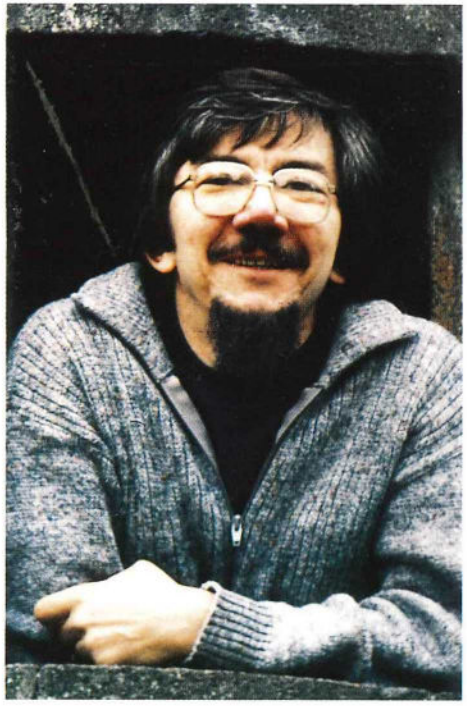
I wish your congress success and you all a pleasant stay in Berlin.

Manfred Erhardt

Prof. Dr. Manfred Erhardt
Senator for Science and Research
of the Gouvernment of Berlin

Dear protozoologists, dear colleagues!

I welcome you in Berlin on behalf of the GERMAN SOCIETY FOR PROTOZOOLOGY. I hope that you will have numerous possibilities for fruitful discussions with your colleagues from all over the world. It is my wish that the INTERNATIONAL CONGRESS CENTER will be a beneficial platform for the protozoological community where you will meet old friends and where you will start new cooperative ventures.



Besides all the important science, don't forget that Berlin is a vivid city with all the excitements of a pulsating metropole.

Have a nice time in our city!

Protecting life - right from the st

Emil von Behring - Pioneer in Medicine

One hundred years ago, in July 1892, Emil von Behring signed a contract with Farbwerke Hoechst - as the company was then known - for the production of an anti-diphtheria serum that he had developed. The new substance entered medical history as the first biological drug worldwide to fight bacterial toxins. It dispelled the mortal terror that diphtheria had spread in many countries.

In 1901, Behring was rewarded for the success of his development with the first Nobel Prize ever to be awarded for medicine and physiology. His work laid the foundation stone Marburg, now a worldwide pharmaceutical company.

Behring´s breakthrough led to a range of vaccines to provide active immunity against a variety of pathogens. Antisera against poisons that have invaded the human organism, for example, as the result of snake bite, are also the result of the pioneering efforts of Emil von Behring. Today, antitoxic sera from Behringwerke are found in almost every emergency depot in the world.

Turning scientific knowledge into a medical programme

Immunology forms an important basis of our medical programme. It is complemented fibrinolysis, area
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General Information

Congress venue
ICC International Congress Center, Berlin
D-14055 Berlin
Telephone: (+49-30) 3038-0
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(+49-30) 3038-5111

Congress organizer
Gesellschaft zur Durchführung des
IX Internationalen Congress
of Protozoology 1993 e.V.
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Freie Universität Berlin
Fachbereich Biologie, Institut für Zoologie
Königin-Luise-Straße 1-3
D-14195 Berlin
Telephone: (+49-30) 8386475
Telefax: (+49-30) 8383916

Congress office
CPO HANSER SERVICE GmbH
Schaumburgallee 12,
D-14052 Berlin
Telephone: (+49-30) 3053131
Telefax: (+49-30) 3057391

Congress counter
The Congress counter in the entrance foyer of the ICC Berlin contains the following sections: new registration of participants (new-registration), issue of Congress documentation (pre-registration), information on the Congress, hotel reservations, supporting program and city information.

Opening times of Congress counter.

Sunday	25 July 1993	14.00 h to 21.00 h
Monday	26 July 1993	8.00 h to 17.00 h
Tuesday	27 July 1993	8.30 h to 17.00 h
Wednesday	28 July 1993	9.30 h to 11.00 h
Thursday	29 July 1993	8.30 h to 17.00 h
Friday	30 July 1993	8.30 h to 17.00 h
Saturday	31 July 1993	8.30 h to 17.00 h

You can contact the Congress office at the Congress counter at the above times on:
Telephone: 030-3038-5111.

Name tags
Participants are requested to wear their name tags at all times during the Congress. Name tags also serve as entry passes into the ICC Berlin and are colour-coded as follows:
blue = participant and accompanying person
red = congress service

Volume of abstracts
Each participant will receive together with the congress documentation an abstract book. Additional copies are available at the congress counter for DM 10,–.

Proceedings
Proceedings will be mailed after the congress to participants who are registered for the full congress.

List of participants
A list of participants is included in the congress material or is available at the counter.

Poster exhibition
The poster exhibition will be staged in the main and side foyer of the ICC Berlin during the Congress. The posters will be displayed for the whole duration of the congress. Poster speakers will announce at the poster display walls at which time they will be available to answer questions. Poster speakers are requested to stay by their posters between 15.30 h and 16.30 h each day.

Submission and checking of slides
Speakers are requested to hand in their slides to room 24 on the west gallery (blue side) at least half a day before their paper.

Message board
A message board is located in the main foyer. You can pin messages for participants there of collect your own messages. Messages are arranged in alphabetical order of your family name from A-K and L-Z.

Supporting program
Tickets for the supporting program (sightseeing trips and excursions) can be obtained during the Congress from the Congress counter.

Catering arrangements
During the day coffee, tea and beverages are available from the buffets in the entrance hall. You will receive vouchers for coffee in your congress documentation. Lunch at a reasonable price is available in the Nipkow selfservice restaurant located in the foyer at the Messedamm exit. The Pullmann Restaurant is located on the third floor of the ICC. A list of recommended restaurants near the ICC and in Berlin can be obtained from the Congress counter.

Cloakroom
The ICC cloakroom is located in the west entrance hall (blue side). You can also leave your luggage here on your day of departure.

Bank
A branch of the Berlin Sparkasse bank will be open during the day in the entrance hall of the ICC. All currencies may be exchanged here under normal banking conditions.

Post office and telephones
There is a post office in the ICC in the east foyer (red side) at the Neue Kantstraße exit. Several coin- and card-operated telephones are available there.

Photocopies
Staff at the Congress counter will make photocopies for you at a cost of DM 0,20 per copy.

Public transport
Berlin has a large public transport network including buses, underground (U-Bahn) trains and suburban (S-Bahn) trains.
From the city centre (Bahnhof Zoo, Kurfürstendamm) to the ICC Berlin:
Bus no. 149;
journey time approx. 30 minutes.

U-Bahn to the ICC:
Line U1 to Kaiserdamm station

S-Bahn to the ICC:
Lines S3, S6, S7 or S9 to Westkreuz station.

Car parks
Private cars can be parked in the ICC car park. The charge is DM 6,- for each day of the Congress (12 hours).

Taxis
Taxis can be ordered from the information desk at the ICC which is located in the foyer at the Neue Kantstraße exit. Taxis depart from the basement level of the ICC.

Social Program

Sunday, 25th July 1993:

Get together

Starting from **6 p.m.** until **9 p.m.**
the Dachgartenrestaurant of the ICC

Monday, 26th July 1993:

Reception of the Senator for Science and Research of the Senat of Berlin

7 p. m. at the ICC
(see special invitation);

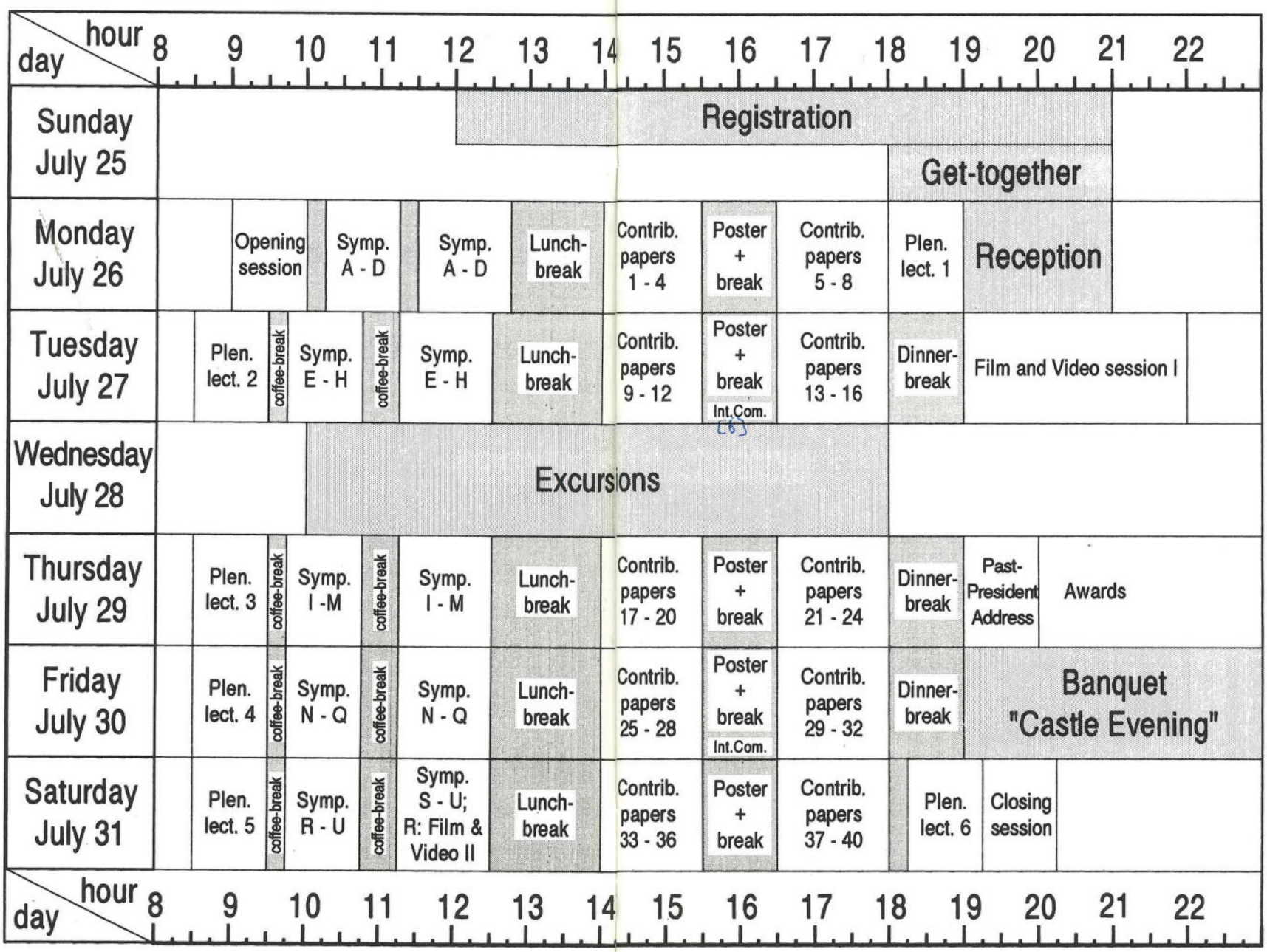
Friday, 30th July 1993:

Castle Evening on Fortress Zitadelle

Colleagues and congress participants are invited to spend the evening before last of the Congress together. The closing banquet takes place in the historical cellars of an old Fortress in the North of Berlin built in the 16th century. A rustic dinner with beer and wine will be offered, entertainment is provided. The evening will be informal, casual dress is recommended.

19.00 h bus departure from ICC to Zitadelle
from 23.00 h return bus transfer to city centre

Contribution of cost for registered congress participants DM 65,-. Tickets will be purchased at the Congress counter.


hour
day
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
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Registration
Get-together
Monday July 26
Opening session
Symp. A - D
Symp. A - D
Lunch-break
Contrib. papers 1 - 4
Poster + break
Contrib. papers 5 - 8
Plen. lect. 1
Reception
Tuesday July 27
Plen. lect. 2
coffee-break
Symp. E - H
coffee-break
Symp. E - H
Lunch-break
Contrib. papers 9 - 12
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Int.Com.
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Dinner-break
Film and Video session I
Wednesday July 28
Excursions
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Plen. lect. 3
coffee-break
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coffee-break
Symp. I - M
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Plen. lect. 4
coffee-break
Symp. N - Q
coffee-break
Symp. N - Q
Lunch-break
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Poster + break
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Saturday July 31
Plen. lect. 5
coffee-break
Symp. R - U
coffee-break
Symp. S - U; R: Film & Video II
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Plen. lect. 6
Closing session

TIME SCHEDULE

	Opening Session / Plenary Lectures	Symposia	Contributed Paper Sessions		Plenary Lectures / Social Events etc.
Monday, July 26	**9:00-10:00** OPENING SESSION [3]	**10:15-11:15; 11:30-12:45** SA [3] Vaccination SB [6] Funct. Organelles Parasites SC [4/5] Recognition & Interaction SD [7] Ecology, Pollution	**14:00-15:30** C1 [7] Ecology I C2 [4/5] Evolution C3 [6] Epidemiology C4 [3] Molecular Biology I	**16:30-18.00** C5 [6] Cell Cycle & Cultivation C6 [7] Cytoskeleton C7 [3] Host-Parasite Relationships C8 [4/5] Morphogenesis & Life Cycles	**18:00** PL1: [3] "Evolution of Protozoa" **19:00** RECEPTION
Tuesday, July 27	**8:30 -9:30** PL2: [3] "Cytoskeleton and molecular basis of patterning"	**9:45-10:45; 11:15-12:30** SE [4/5] Life Cycles SF [3] Chemotherapy & -prevention SG [7] Motility, Behaviour, Orientation SH [6] Genomal Organization	**14:00-15:30** C9 [7] Ecology II C10 [4/5] Motility, Behaviour, Orient. C11 [6] Pathology of Infection C12 [3] Molecular Biology II	**16:30-18.00** C13 [7] Genetics I C14 [6] Pollution C15 [4/5] Immunoprotection C16 [3] Opport. Protozoa and AIDS I	**19:00** Film and Video Session I [7]
Wednesday, July 28		EXCURSIONS			
Thursday, July 29	**8:30 -9:30** PL3: [3] "Programmed DNA rearrangements in *Tetrahymena.*"	**9:45-10:45; 11:15-12:30** SI [6] Cultivation Parasitic Protozoa SK [7] Cytoskeleton SL [4/5] Molecular Persp. Evolution SM [3] Control of Cell Cycle	**14:00-15:30** C17 [7] Ecology III C18 [4/5] Sexuality & Nucl. Phenom. C19 [6] Ext. Agents (Chemother.) I C20 [3] Molecular Biology III	**16:30-18.00** C21 [7] Genetics II C22 [6] Signal Transd. & Transm. C23 [4/5] Parasite-Evertebrate Interact. C24 [3] Opport. Protozoa & AIDS II	**19:00** PAST-PRESIDENT ADDRESS [3] **20:00** AWARDS [3]
Friday, July 30	**8:30 -9:30** PL4: [3] "Progress in antiprotozoan vaccination"	**9:45-10:45; 11:15-12:30** SN [3] Molecular Immunology SO [7] Diagnosis Techniques SP [6] Anaerobic Environments SQ [4/5] Intracellular Traffic	**14:00-15:30** C25 [7] Ecology IV C26 [3] Molecular Biology IV C27 [6] Ext. Agents (Chemother.) II C28 [4/5] Identif. Species & Strains I	**16:30-18.00** C29 [4/5] Morphogenesis C30 [7] Symbiosis C31 [6] Fine Structure C32 [3] Diagnosis Techniques I	**19:00** BANQUET "CASTLE EVENING"
Saturday, July 31	**8:30 -9:30** PL5: [3] "Opportunistic Protozoa and AIDS"	**9:45-10:45; 11:15-12:30** SR [7] Film and Video Session II SS [4/5] Interaction in Symbiosis ST [3] Mechanism of Pathogenicity SU [6] Food Chains	**14:00-15:30** C33 [3] Ultrastructure C34 [6] Metabolism C35 [7] Cultivation C36 [4/5] Identif. Species & Strains II	**16:30-18.00** C37 [6] Taxonomy, Nomenclature C38 [7] Microspora & Myxozoa C39 [4/5] Toxoplasmosis C40 [3] Diagnosis Techniques II	**18:15** PL6: [3] "Modern technologies in Prot." **19:15** CLOSING SESSION [3]

in brackets [ ]: room number)

a new and unique concept

H. Mehlhorn, Bochum (Ed.)

Parasitology in Focus

Facts and Trends

1988. 2000 figures. 25 large sized pages. Hard cover DM 298,-
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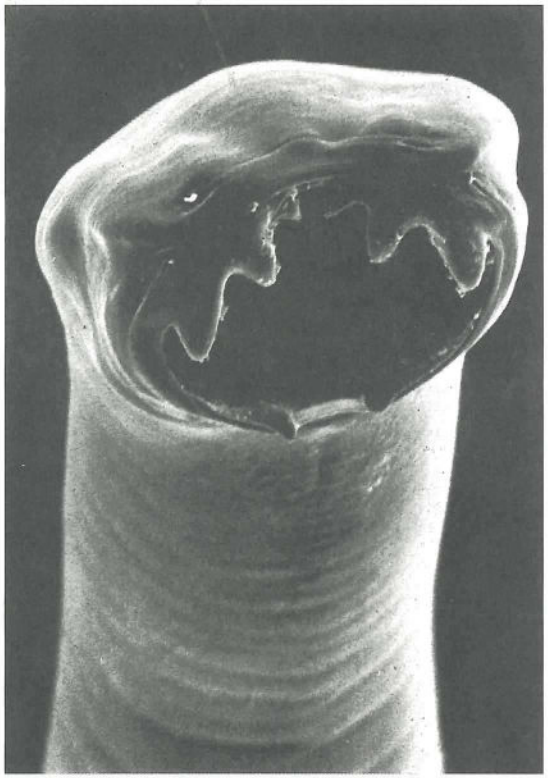

Specialists from 10 countries contributed chapters:

- Life cycles
- Behaviour and parasitism
- Morphology
- Reproduction
- Genetics
- Epidemiology
- Metabolism
- Host finding
- Clinical symptoms
- Pathology
- Geomedicine
- Immunology
- Serology
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- Vaccination
- Chemotherapy
- Resistance
- Strategies of control

"Parasitology in Focus" is a readily comprehensible overview of established knowledge and the latest findings in human and veterinary parasitology. The clear layout, readily understandable language, topicality and current relevance of the book will make it of great use to students, lecturers, and researchers.

"Parasitology Today"

The established journal in the field:

Parasitology Research

Founded as Zeitschrift für Parasitenkunde

Editors: B. Chobotar, Berrien Springs, MI, USA; **H. Mehlhorn,** Bochum, FRG. In cooperation with a distinguished Editorial Board. This international journal presents information on the latest developments in parasitology research. Special emphasis is placed on practical aspects such as immunodiagnosis, chemotherapy, and epidemiology. In addition, review articles provide a quick survey of current advances.

Fields of interest:

- General, biological, medical, and veterinary parasitology
- Protozoology, helminthology, and entomology
- Morphology (pathomorphology and ultrastructure)
- Biochemistry, physiology, and pathophysiology
- Parasite-host relationships (immunology and host specificity)
- Life history, ecology, and epidemiology
- Diagnosis, chemotherapy, and control of parasitic diseases

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Plenary Lectures

Mon, July 29, 19:00 [Room 3]

Patterson, D.J. (Sydney, Australia)

The evolution of Protozoa.

Tue, July 27, 8:30 [Room 3]

Beisson, J. (Gif-sur-Yvette, France)

Cytoskeleton and molecular basis of patterning.

Thu, July 29, 8:30 [Room 3]

Yao, M.C. (Seattle, USA)

Programmed DNA rearrangements in *Tetrahymena.*

Fri, July 30, 8:30 [Room 3]

Pereira da Silva, L.H. (Paris, France)

Progress in antiprotozoan vaccination.

Sat, July 31, 8:30 [Room 3]

Canning, E.U. (London, UK)

Opportunistic Protozoa and AIDS.

Sat, July. 31, 18:15 [Room 3]

Johnson, A.M. (Sydney, Australia)

Modern technologies in Protozoa: Aims and possibilities.

Symposia

Mon, July 26 **A** **Vaccination** [Room 3]

10:15

Chairpersons:	R. Nussenzweig	(New York, USA)
	J. Eckert	(Zürich, Switzerland)
Coordinator:	B. Enders	(Marburg, Germany)

Enders, B. (Marburg, Germany) Malaria vaccine development - obstacles and opportunities.

Shirley, M. (Huntingdon, UK) Vaccination against avian coccidia: A success story?

Friedhoff, K.F. (Hannover, Germany) Vaccination against babesiosis.

Tarleton, R.L. (Athens, USA) *Trypanosoma cruzi*-specific CTL: A new target for induction of protective immunity?

Nene, V., Morzaria, S., McKeever, D., Musoke, A. (Nairobi, Kenya) Vaccines against *Theileria parva.*

Mon, July 26 **B** **Functional Aspects of Organelles in Parasitic Protozoa** [Room 6]

10:15

Chairpersons:	F.R. Opperdoes	(Brussel, Belgium)
	J.F. Dubremetz	(Villeneuve d'Ascq, France)
Coordinator:	R. Entzeroth	(München, Germany)

Cesbron-Delauw, M.-F., Lecordier, L., Mercier, C., Zenner, L., Capron, A. (Lille, France) Molecular characterization of dense granule antigens of *Toxoplasma gondii.* Their role in host-parasite interaction.

Preiser, P., Rangachari, K., Roberts, K., Strath, M., Whyte, A., Williamson, D.H., Wilson, R.J.M. (London, UK) Possible function and localization of the 35 kb extrachromosomal DNA of *Plasmodium falciparum.*

Opperdoes, F.R. (Brussel, Belgium) Properties and biogenesis of glycosomes of the Kinetoplastida.

Benne, R., Arts, G.J., Leegwater, P., Speijer, D., Van den Burg, J., De Haan, A., Sloof, P.E.C. (Amsterdam, The Netherlands) RNA editing in the insect trypanosome *Crithidia fasciculata.*

Mon, July 26 **C** **Recognition and Cell Interaction** [Room 4/5]

10:15

Chairpersons:	C. Miceli	(Camerino, Italy)
	A. Miyake	(Camerino, Italy)
Coordinator:	H.-W. Kuhlmann	(Münster, Germany)

Musgrave, A. (Amsterdam, The Netherlands) Intracellular signalling during the mating of *Chlamydomonas* gametes.

Sikora, J. (Warsaw, Poland) Autocrine control of encystment in *Physarum polycephalum* microplasmodia.

Yudin, A. (St. Petersburg, Russia) Cell interaction in *Dileptus*.

Miceli, C. (Camerino, Italy) Advancements in the study of the molecular basis of cell recognition in *Euplotes raikovi*.

Harumoto, T. (Camerino, Italy) Predator-prey interaction in ciliates: organelles and molecules which participate in the interaction.

Kusch, J. (Münster, Germany) Predator-released factors that induce defensive responses in *Euplotes*.

Mon, July 26 **D** **Ecology: Pollution and Toxic Blooms** [Room 7]

10:15

Chairpersons: C. Curds (London, UK)
M. Bereczky (Göd, Hungary)
Coordinator: M. Elbraechter (List, Germany)

Novarino, F., Kinner, N.E., Warren, A. (London, UK; Durham, USA) Protists in polluted groundwaters.

Finlay, B.J. (Ambleside, UK) Protozoa in landfill sites.

Foissner, W. (Salzburg, Austria) Protozoa as bioindicators in polluted soils.

Pratt, J.R. (Pennsylvania, USA) Protozoa as predictors of environmental degradation.

Chretiennot-Dinet, M.-J. (Banyuls-sur-Mer, France) Marine algal blooms.

Tue, July 27 **E** **Life Cycles** [Room 4/5]

9:45

Chairpersons: T. Beyer (St. Petersburg, Russia)
B. Chobotar (Berrien Springs, USA)
Coordinator: K.T. Friedhoff (Hannover, Germany)

Entzeroth, R. (München, Germany) Newly discovered life cycles in the coccidia and new molecular techniques helpful for future taxonomic research.

Sundermann, C. (Auburn, USA) In vitro simulation of caryosporan development in reptiles and mammals: Temperature controlled?

Becnel, J.J. (Gainesville, USA) Microsporidia in mosquitoes: Host-parasite relationships.

Sinden, R.E., Fleck, S.L., Jones, I., Butcher, G.A., Thompson, R., Høgh, B. (London, UK; Copenhagen, Denmark; Maputo, Mozambique) Factors that regulate the transmission of malarial parasites to the mosquito vector.

Tue, July 27 **F** **Chemotherapy and Chemoprevention** [Room 3]

9:45

Chairperson: M. Segovia (Murcia, Spain)
J. Schrével (Paris, France)
Coordinator: W. Raether (Frankfurt, Germany)

Segovia, M. (Murcia, Spain) Gene amplification in *Leishmania*: A mechanism of drug resistance.

Schrével, J. (Paris, France) Inhibitory effects of antimicrotubular drugs on the erythrocytic phase of malaria.

Chance, M.L., Goad, L.J. (Liverpool, UK) The use of sterol biosynthesis inhibitors as anti-*Trypanosoma cruzi* agents.

Lockwood, B., Coombs, G.H. (Glasgow, UK) TFMET, a novel antitrichomonal and antiamoebal drug.

Wang, G.T. (Princeton, USA) Current trend of chemotherapy of poultry coccidiosis.

Tue, July 27 **G** **Motility, Behaviour and Orientation** [Room 7]

9:45

Chairpersons: A. Grebecki (Warsaw, Poland)
D.C. Wood (Pittsburgh, USA)
Coordinator: R. Bräucker (Bochum, Germany)

Fukui, Y. (Chicago, USA) Composition, organization and function of the motor systems of free living *Dictyostelium* amoebae.

Preston, T.M., King, C. (London, UK) Strategies for cell-substratum dependent motility among protozoa.

Febvre, C., Febvre, J. (Villefranche-sur-Mer, France) Structural and physiological basis of axipodial dynamics.

Machemer, H. (Bochum, Germany) Ciliate gravireception and graviresponses.

Tue, July 27 **H** **Genomal Organization** [Room 6]

9:45

Chairpersons: F. Caron (Paris, France)
C.L. Jahn (Chicago, USA)
Coordinator: G. Steinbrück (Tübingen, Germany)

Sibley, L.D., Messina. M., Howe, D. (St. Louis, USA) Development of genetic systems for *Toxoplasma gondii*

Pays, (Brussel, Belgium)

Meyer, E. (Paris, France)

Thu, July 29 **I** **Cultivation of Parasitic Protozoa** [Room 6]

9:45 Chairpersons: R. Brun (Basel, Switzerland)
H.N. Lanners (Covington, USA)
Coordinator: F. Ebert (Hamburg, Germany)

Lanners, H.N. (Covington, USA) *In vitro* cultivation of malaria parasites.

Hirumi, H. (Nairobi, Kenya) Axenic cultivation of bloodstream forms of African trypanosomes.

Nerad, T.A. (Rockville, USA) Cultivation of *Entamoeba histolytica* and *Giardia.*

Cushion, M.T. (Cincinnati, USA) Cultivation of *Pneumocystis carinii:* Perspectives.

Thu, July 29 **K** **Cytoskeleton** [Room 7]

9:45 Chairpersons: J. Grain (Aubiére, France)
G. Brugerolle (Aubiére, France)
Coordinator: M. Melkonian (Köln, Germany)

Rodrigues-Pousada, C., Soares, H., Penque, D., Mouta, C. (Oeiras. Portugal) Biosynthesis of microtubules in ciliates: Molecular and biochemical approaches.

Melkonian, M., Lechtreck, K.-F., Bremerich, A., Weber, K. (Köln, Göttingen, Germany) SF-assemblin and ß-giardin, representatives of a new family of cytoskeletal proteins in protists, which form segmented coiled coils.

Preston, T.M. (London, UK) The cytoskeleton in amoeboid movements.

Brugerolle, G. (Aubiere, France) Cytoskeletal structures of trichomonads: Protein composition and evolutionary considerations.

Fleury, A. (Orsay, France) Tubulin diversity and microtubule deployment among ciliates.

Thu, July 29 **L** **Molecular Perspective on Protozoan Evolution** [Room 4/5]

9:45 Chairpersons: A. Adoutte (Paris, France)
A.M. Johnson (Sydney, Australia)
Coordinator: M. Schlegel (Tübingen, Germany)

Müller, M. (New York, USA) Subcellular organization of core metabolism and its enzymes as clues of protist phylogeny.

Ellis, J., Morrison, J., Johnson, A.M. (Gore Hill, Australia) Analysis of dinucleotide frequency and codon usage in the phylum Apicomplexa.

Sogin, M.L. (Woods Hole, USA)

Baroin, A. (Orsay, France)

Tibayrenc, M. (Montpellier, France) Taxonomy and evolution of parasitic protozoa and fungi: A population genetic view.

Thu, July 29 **M** **Control of Cell Cycle** [Room 3]

9:45 Chairpersons: Y. Watanabe (Tsukuba, Japan)
J.D. Berger (Vancouver, USA)
Coordinator: F. Jauker (Giessen, Germany)

Berger, J.D. (Vancouver, Canada)

Cleffmann, G. (Giessen, Germany) Evidence for p34cdc2 and cyclin in *Tetrahymena thermophila.*

Kimura, M., Hirono, M., Edamatsu, T., Takemasa, T., Watanabe, Y. (Tsukuba, Japan) Promoter elements and *in vitro* gene expression systems in *Tetrahymena.*

Allis, C.D. (Syracuse, USA)

Fri, July 30 **N** **Molecular Immunology and Host Parasite Interface** [Room 3]

9:45 Chairpersons: V. Nussenzweig (New York, USA)
J.F. De Jonckheere (Brussel, Belgium)
Coordinator: M. Röllinghoff (Erlangen, Germany)

Frevert, U., Cerami, C., Sinnis, P., Takacs, B., Clavijo, P., Santos, M., Nussenzweig, V. (New York) The mechanisms of recognition of hepatocytes by malaria sporozoites.

Rabinovitch, M., Veras, P. (Paris) Selective access of particles to the parasitophorous vacuoles of *Leishmania*-infected macrophages.

Sibley, L.D., Neisman, I., Dobrowolski, J. (St. Louis, USA) Invasion and intracellular survival by *Toxoplasma gondii.*

Ziegelbauer, K. (Wuppertal, Germany) The invariant surface proteins of African trypanosomes.

Williams, N. (Buffalo, USA) Regulation and characterization of the *Trypanosoma brucei* ATP synthase.

Fri, July 30 **O** **New Diagnosis Techniques** [Room 7]

9:45 Chairpersons: B. Gottstein (Bern, Switzerland)
H. Aspöck (Vienna, Austria)
Coordinator: K. Janitschke (Berlin, Germany)

Müller, N., Imboden, M., Büscher, P., Seebeck, T. (Bern, Switzerland; Antwerp, Belgium) African trypanosomiasis: Bacterial expression of non-variable antigens with immunodiagnostic potential.

Tannich, E. (Hamburg, Germany) Diagnostic PCR for pathogenic and non-pathogenic *Entamoeba histolytica* infections.

Vidaud, M. (Paris, France). Diagnostic PCR in toxoplasmosis.

Bordier, C. (Lausanne, Switzerland) New trends in antigen detection methods in leishmaniasis.

Fri, July 30 **P** **Protozoa in Anaerobic Environments** [Room 6]

9:45

Chairpersons: M. Müller (New York, USA)
B.J. Finlay (Ambleside, UK)
Coordinator: R. Radek (Berlin, Germany)

Leipe, D.D., Gunderson, J.H., Hinkle, G.J., Sogin, M.L. (Woods Hole, USA) Molecular systematics and the early evolution of eukaryotes.

Odelson, D., Breznak, J. (Mt. Pleasant, Lansing, USA) Anaerobic, cellulolytic protozoa from wood-eating lower termites.

Finlay, B.J., Fenchel, T., Embley, T.M. (Ambleside, UK) Symbiosis between methanogens and free-living anaerobic ciliates.

Williams, A.G. (Ayr, UK) The role of ciliate protozoa in the rumen ecosystem.

Fri, July 30 **Q** **Intracellular Traffic** [Room 4/5]

9:45

Chairpersons: R.D. Allen (Honolulu, USA)
R. Peck (Geneve, Switzerland)
Coordinator: W. Stockem (Bonn, Germany)

Melkonian, M. (Köln, Germany) Biogenesis of scales and Golgi function in thecate green flagellates.

Peck, R. (Geneve, Switzerland)Trichocyst biogenesis in *Pseudomicrothroax:* A model system for the study of dense core secretory granule formation.

Stockem, W., Christofidou-Solomidou, M. (Bonn, Germany; Albany, USA) Endosomal pathways in large amebas.

Fok, A.K. (Honolulu, USA) Membrane trafficking in *Paramecium:* The phagosomal and endosomal systems.

Allen, R.D. (Honolulu, USA) Recent developments on intracellular membrane traficking.

Sat, July 31 **R** **Film/Video-Session II** [Room 7]

9:45

Chairperson: H. Gundlach (Oberkochen, Germany)
Coordinator: N. Hülsmann (Berlin, Germany)

Gundlach, H. (Oberkochen, Germany) Optoelectronic imaging for the detection of multiparameter fluorescence microscopy.

Hausmann, K., Machemer, H., Haarhaus, D., Gradias, M. (Berlin, Bochum, Göttingen, Wolfenbüttel, Germany) Motility: Movement of cilia and flagella.

Leick, V., Rosenberg, J., Koppelhus, U. (Copenhagen, Denmark) Cilia-mediated oriented chemokinesis in *Tetrahymena thermophila.*

Eisler, K., Grell, K.G. (Tübingen, Germany) Plasmodial protists of the sea.

Sat, July 31 **S** **Interactions in Symbiosis** [Room 4/5]

9:45

Chairpersons: A.T. Soldo (Miami, USA)
S. Fokin (St. Petersburg, Russia)
Coordinator: H.-D. Görtz (Stuttgart, Germany)

Lee, J.J., Wray, C., Cooke, D., Lawrence, C., La Pierre, P., Espinal, G., Oleá, R. (Cuny, New York, USA) Algal symbiont specificity in Foraminifera.

Fujishima, M. (Yamaguchi, Japan) Interactions between the ciliate *Paramecium* and its endonuclear symbiotic bacterium *Holospora.*

Jeon, K.W. (Knoxville, USA) Host-symbiont interactions in ameba-bacteria symbiosis.

Soldo, A.T., Vazquez, D., Musil, G., Brickson, S. (Miami, USA) Bacterial symbiosis in a marine ciliate.

Sat, July 31 **T** **Mechanisms of Pathogenicity Among Parasitic Protozoa** [Room 3]

9:45

Chairpersons: P. Cappuccinelli (Sassari, Italy)
A.M. Johnson (Sydney, Australia)
Coordinator: G.A. Schaub (Bochum, Germany)

Crisanti, A. (Roma, Italy) The role of the thrombospondin related anonymous protein TRAP of *Plasmodium falciparum* in parasite-host cell interactions.

Andrews, N.W. (New York, USA)

Mackenstedt, U., Mehlhorn, H. (Sydney, Australia; Bochum, Germany) *Entamoeba histolytica:* Pathogenesis.

Schaub, G.A. (Bochum, Germany) Pathogenicity of trypanosomatids for reduviid bugs.

Vickerman, K. (Glasgow, UK) Pathogenicity mechanisms in African trypanosomiasis.

Sat, July 31 **U** **Protozoan Links in Food Chains** [Room 6]

9:45

Chairpersons: D.A. Caron (Woods Hole, USA)
B.J. Finlay (Ambleside, UK)
Coordinator: W. Foissner (Salzburg, Austria)

Rassoulzadegan, F. (Villefranche-sur-Mer, France) Protozoan micro-scale spatial distribution: Function of food uptake kinetics.

Smetacek, V. (Bremerhaven, Germany) Role of protozoa in food chains.

Sanders, R.W. (Philadelphia, USA) Protozoan/metazoan interactions: Predation, food quality and population control.

Swanberg, N.R. (Washington, USA) The ecology of large sarcodine protozoa.

Contributed Paper-Sessions

Mon, July 26 C1. Ecology I [Room 7]

14:00 Chairperson: J.R. Pratt (Penn State, USA)
Coordinator: E. Aescht (Linz, Austria)

Berthold, A., Foissner, W. (Salzburg, Austria) Methodological problems in soil protozoology: abundance estimation of active ciliates.

Bamforth, S., Freckmann, D., Virginia, R. (New Orleans, Riverside, Hanover, USA) Soil protozoa of the antarctic polar desert.

Aescht, E., Foissner, W. (Linz, Salzburg, Austria) Effects of organically enriched magnesite fertilizers on the soil ciliates and testate amoebae of a spruce forest.

Butler, H.G., Rogerson, A. (Millport, Scotland) The role of naked amoebae in marine benthic food webs.

Raman, A.V., Kalavati, C., Vaidehi, J. (Andhra, India) Planctonic ciliates in relation to pollution in Visakhapatnam labour, India.

Bereczky, M.Cs., Nosek, J.N. (Göd, Hungary) Protozoological investigations in the side-arm system "Szigetköz" of the river Danube.

Mon, July 26 C2. Evolution [Room 4/5]

14:00 Chairperson: D.H. Lynn (Guelph, Canada)
Coordinator: D. Leipe (Woods Hole, USA)

Martin-Gonzalez, A., Benitez, L., Palacios, G., Guiterrez, J.C. (Madrid, Spain) A phylogenetic study on ciliate encystment: cystic semes.

Hill, B.F. (Washington DC, USA) Morphogenesis: the key to hypotrich phylogeny.

Foissner, W. (Salzburg, Austria) The colpodids, an intriguing group of predominantly soil-dwelling ciliates.

Bardele, C.F. (Tübingen, Germany) The ultrastructure of *Chlamydodon* favours a closer relationship between Nassulida and Cyrtophorida.

De Jonckheere, J.F. (Brussels, Belgium) Phylogenetic relationships of *Naegleria spp.* based upon small-subunit ribosomal DNA sequences.

Wright, A.-D.G., Lynn, D.H. (Guelph, Canada) Phylogenetic relationships within the Hymenostomatida (Ciliophora: Oligohymenophorea) inferred from small subunit rRNA sequence.

Mon, July 26 C3. Epidemiology [Room 6]

14:00 Chairpersons: A. Spielman (Boston, USA)
B. Latif (Baghdad, Iraq)
Coordinator: M. Rommel (Hannover, Germany)

Endo, T., Yagita, K., De Jonckheere, J.F. (Tokyo, Japan; Brussels, Belgium) Molecular epidemiology of *Acanthamoeba* strains from human eye infections.

Liu, J. (Shanghai, P.R. China) *Acanthamoeba keratitis* in P.R. China.

Thompson, R.C.A., Meloni, B.P., Morgan, U.M., Hopkins, R.M. (Murdoch, Australia) The molecular epidemiology of giardiasis: Evidence of zoonotic transmission.

Zhao, Y., Ma, C. (Chongqing, P.R. China) Parasitic flagellates of freshwater fishes from Sichuan province of China.

Latif, B., Mohammed, B. (Baghdad, Iraq) Epidemiology of caprine sarcocystosis in Iraq.

Assoku, R.K.G. (Legon, Ghana) An epidemio-diagnostic study of bovine haemo-parasitism in Ghana.

Lukiko, N, Urassa, H. (Ifakara, Tanzania) Sensitivity and specificity of laboratory diagnosis of parasitic protozoa at district and peripheral level (LAB) in Tanzania.

Mon, July 26 C4. Molecular Biology I [Room 3]

14:00 Chairpersons: R. Braun (Bern, Switzerland)
F. Opperdoes (Brüssel, Belgium)
Coordinator: K.H. Eschenbacher (Bochum, Germany)

Duchêne, M., Binder, M., Ortner, S., Fodinger, M., Plaimauer, B., Wiedermann, G., Scheiner, O. (Vienna, Austria) cDNA cloning of *Entamoeba histolytica* histone H4.

Plaimauer, B., Ortner, S., Scheiner, O., Wiedermann, G., Duchêne, M. (Vienna, Austria) An intron-containing gene from *Entamoeba histolytica*.

Ebert, F., Buß, H., Horstmann, R.D., Tannich, E. (Hamburg, Germany) Molecular cloning of an *Entamoeba histolytica* gene encoding a polypeptide with similarities to actin-binding proteins.

Klein, H., Eschenbacher, K.-H., Sommer, I., Mehlhorn, H., Entzeroth, R., Rüger, W. (Bochum, Bonn, Germany) cDNA clones encoding a major microneme antigen of *Sarcocystis muris* (Apicomplexa).

Eschenbacher, K.-H., Sommer, I., Rueger, W., Mehlhorn, H. (Bochum, Germany) Structure and expression of the gene coding for a major surface antigen of *Sarcocystis muris* (Coccidia; Apicomplexa).

Qijun, C., Dechang, L., Zhongtang, Y. (Changchun, P.R. China) Construction of *Babesia gibsoni* cDNA library.

Mon, July 26 **C5.** **Cell Cycle and Cultivation** [Room 6]

16:30 Chairperson: L. Rasmussen (Odense, Denmark)
Coordinator: G. Cleffmann (Giessen, Germany)

Burzlaff, A., Hausmann, K., Wecke, J. (Berlin, Germany) Quantitative analysis of the digestion of bacteria by *Paramecium*.

Christensen, S.T., Rasmussen, L., Schousboe, P. (Odense, Denmark) A new group of compounds in control of growth and cell multiplication in *Tetrahymena*.

Kiy, T., Tiedtke, A. (Münster, Germany) High-cell-density cultures of ciliates for production of biologicals.

Rasmussen, L., Tiedtke, A. (Odense, Denmark; Münster, Germany) Cultivation of ciliates: digestion, enzyme production, and growth control.

Vosskühler, C., Tiedtke, A. (Münster, Germany) Analysis of the phagosome-lysosome cycle of *Tetrahymena thermophila*.

Mon, July 26 **C6.** **Cytoskeleton** [Room 7]

16:30 Chairperson: J. Kloetzel (Catonsville, USA)
Coordinator: M. Hauser (Bochum, Germany)

Fleury, A., Bré, M.H., Clérot, J.C., Callen, A.M., Baroin, A., Jeanmaire, R., Levilliers, N., Iftode, F., Laurent, M., Adoutte, A. (Paris, France) Tubulin diversity and microtubule deployment among ciliates.

Soares, H., Penque, D., Mouta, C., Rodrigues-Pousada, C. (Oeiras, Portugal) TCP1 gene expression in *Tetrahymena* cells: an important role in ciliogenesis.

Kloetzel, J.A. (Catonsville, USA) Identification of a major protein component of the basal body "cages" in the compound ciliary organelles of *Euplotes*.

Kurasawa, Y., Numata, O., Watanabe, Y. (Tsukuba, Japan) Identification of *Tetrahymena* 14-nm filament-associated protein as elongation factor 1α.

Maciejewski, J.J., Vacchiano, E.J., Buhse, H.E. jr (Chicago, USA) Molecular studies on a class of calcium-binding cytoskeletal proteins in *Vorticella* and *Tetrahymena*.

Mon, July 26 **C7.** **Host Parasite Immunological Relationships** [Room 3]

16:30 Chairpersons: R.E. Sinden (London, UK)
M. Tanaka (Buffalo, USA)
Coordinator: A.M. Tenter (Hannover, Germany)

Gottstein, B. (Zürich, Switzerland) Antigenic variation in *Giardia lamblia*: The role of intestinal IGA and lymphocytes.

Smith, N., Wallach, M., Miller, C., Braun, R., Eckert, J. (Zürich, Bern, Switzerland) Maternally-transmitted immunity to poultry coccidia (*Eimeria maxima*).

Igarashi, I., Waki, S., Omata, Y., Saito, A., Shinagawa, M., Suzuki, N. (Obihiro, Maebashi, Japan) Contribution of CD4$^+$ T cells in control of *Babesia microti* infection in mice.

Golenser, J., Groner, Y., Peled-Kamar, M., Schwartz, E., Pollack, Y. (Jerusalem, Rehovot, Beer-Sheva, Israel) The effects of elevated levels of superoxide dismutase (SOD) in erythrocytes from transgenic mice, on the development of *Plasmodium berghei*.

Schaub, G.A., Mossmann, H. (Bochum, Freiburg, Germany) *Trypanosoma cruzi* and the unspecific components of the immune system.

Wiegner, O., Truyens, C., El Bouhdidi, A., Entzeroth, R., Daëron, M., Carlier, Y. (Bonn, Germany; Brussels, Belgium; Paris, France) Adhesion and infection of murine Fcγ RIIb$_1$-transfected fibroblasts by *Trypanosoma cruzi*.

Sternberg, J.M., Mabbot, N.A., McGuigan, F. (Aberdeen, UK) Nitric oxide in African trypanosome infections: Parasite killing or host immunosuppression?

Risse, H.J., Reitter, B., Reinwald, E. (Berlin, Germany) Distribution of immunodominant epitopes within a variant surface glycoprotein from *Trypanosoma congolense*.

Hernández-Montes, O., Fuentes, I., García, C., Favila, L., Serrano, A., Monroy, A. (Mexico City, Mexico) Behaviour in mice and in culture of *Leishmania mexicana* isolated from Mexican patients.

Mon, July 26 **C8.** **Morphogenesis and Life Cycles** [Room 4/5]

16:30 Chairpersons: M.B. Markus (Johannesburg, South Africa)
A.W.H. Neitz (Pretoria, South Africa)
Coordinator: F. Hiepe (Berlin, Germany)

Beyer, T.V. (St. Petersburg, Russia) The sporozoan life cycle as a regular system of species existence.

Fuchs, P., Mehlhorn, H., Schein, E., Hauschild, S. (Bochum, Berlin, Germany) Studies on the DNA-conditions of developmental stages within the life cycle of *Babesia canis*.

Gauer, T., Mehlhorn, H., Schein, E., Zapf, F. (Bochum, Berlin, Germany) Comparative DNA-measurements on the developmental stages of different species of piroplasms.

Ben Miled, L., Dellagi, K., Tait, A., Brown, C.G.D. (Edinburgh, UK; Tunis, Tunisia; Glasgow, UK) Clonal or sexual reproduction in *Theileria annulata*: Recombination and polymorphism.

Odening, K., Wesemeier, H.-H., Walter, G., Bockhardt, I. (Berlin, Germany) First record of bovine *Sarcocystis* species found in European bison (wisent).

Pospichal, H., Brun, R., Kaminsky, R., Schweizer, J., Jenni, L. (Basel, Switzerland) Hybrid formation between African trypanosomes *in vitro*.

Michel, R., Schmid, E.N., Müller, K.-D. (Koblenz, Essen, Germany) Intracellular bacterial parasite of *Saccamoeba lucens* (Hartmannellidae).

Coats, D.W. (Edgewater, USA) An ectoparasitic dinoflagellate of loricate choreotrich ciliates.

Diagana, E. (Nouakchott, Mauretania) Trypanosomiasis of camels: *T. evansi*.

Tue, July 27 **C9.** **Ecology II** [Room 7]

14:00 Chairperson: D.A. Munson (Chesterton, USA)
Coordinator: R. Krüger (Kiel, Germany)

Krüger, R., Röttger, R. (Kiel, Germany) New Results on the life cycle of *Heterostegina depressa* (Foraminifera).

Langlois, G.A. (Smithfield, USA) Models for depicting ecologic stress in marine microbial communities.

Swanberg, N. (Woods Hole, USA) The ecology of large sarcodine protozoa (Radiolaria, Foraminifera, and Acantharia) and their roles in pelagic food webs.

Robinson, B., Dobson, P., Christy, P., Hayes, S. (Salisbury, Australia) The role of thermal niches in the radiation, ecology and biogeography of *Naegleria spp.*

Gross, O., Hemleben, Ch., Kitazato, H. (Tübingen, Germany; Shizuoka, Japan) Microdistributional pattern of deep-sea foraminifera observed in laboratory cultures.

Munson, D.A. (Chesterton, USA) Cyst-Forming and temperature tolerant gymnamoeba from Bermuda inshore and freshwater sediments.

Tue, July 27 **C10.** **Motility, Orientation and Behaviour** [Room 4/5]

14:00 Chairperson: C. Rodrigues-Posada (Oeras Codex, Portugal)
Coordinator: R. Bräucker (Bochum, Germany)

Asai, H., Hiyama, S. (Tokyo, Japan) Geotactic and thigmotactic behaviours of paramecia several millimeters below the solution surface.

Fabczak, S., Fabczak, H., Song, P.-S. (Warsaw, Poland; Lincoln, USA) The effect of the ionic environment changes on the photoresponses of *Blepharisma* cells.

Febvre, J., Febvre-Chevalier, C. (Villefranche-sur-Mer, France) Structural and physiological basis of axopodial dynamics.

Meyer, R., Schmidt, E., Stockem, W. (Bonn, Germany) Significance of intra- and extracellular Ca^{2+} for locomotion of *Amoeba proteus.*

Nematbakhsh, S., Bergquist, B. (Cedar Falls, USA) Periodicity of contractile vacuole activity in *Tetrahymena.*

Ricci, N. (Pisa, Italy) Considerations about ethology of ciliates: an updated synopsis for a fertile advance.

Tue, July 27 **C11.** **Pathology of Protozoan Infections** [Room 6]

14:00 Chairpersons: F. Guhl (Bogotá, Colombia)
G.L. Enriquez (Quezon City, Philippines)
Coordinator: A. Daugschies (Hannover, Germany)

Jäkel, T., Burgstaller, H., Loos-Frank, B. (Stuttgart, Germany; Bangkok, Thailand) The pathogenicity of acute *Sarcocystis*-infection: A new approach in biocontrol of wild rat populations.

Whang, Eun-Mi, Bürger, H.-J. (Gießen, Germany) Absorption of vitamin A in *Eimeria separata* infected rats.

Wood, F.E.I. (Brisbane, Australia) Is *Trypanosoma chelodinae* potentially pathogenic?

Ndung'u, J., Ngure, R., Ngotho, J., Sayer, P. (Kikuyu, Kenya) Changes in the cerebrospinal fluid of vervet monkeys infected with *T. rhodesiense.*

Enriquez, G.L., Matias, R.R., Lagmay, J.P., Natividad, F.F. (Quezon City, Philippines) The pathogenicity in mice of *Acanthamoeba* sp. isolated from human keratitis.

Basak, S. K., Bhattacharya, A. (Calcutta, India) Relationship between histopathological changes in lymphoid organs and disease progression in susceptible and resistant murine model during experimental visceral leishmaniasis.

Tue, July 27 **C12.** **Molecular Biology II** [Room 3]

14:00 Chairpersons: Y. Kaneda (Tsukuba, Japan)
J.F. Dubremetz (Villeneuve d'Ascq, France)
Coordinator: F. Wunderlich (Düsseldorf, Germany)

Carey, B., Bonnefoy, S., Fandeur, T., Le Scanf, C., Guilotte, M., Grellier, P., Schrével, J., Mercereau-Puijalon, O. (Paris, France; Cayenne, French Guiana) A new *Plasmodium falciparum* multigenic family expressed at the late schizont stage.

Ravot, E., Modiano, D., Hablützel, A., Lombardi, S., Müller, M., Crisanti, A., Miceli, C., Esposito, F. (Camerino, Roma, Italy) Heterogeneity of the CS gene of *Plasmodium falciparum* sequenced from infected mosquitoes collected in a single village in Burkina Faso.

Guan, W.B., Walliker, D., Ranford-Cartwright, L., Zhang, L.-Q., Xu D. (Shanghai, P.R. China; Edinburgh, UK) Cloning and investigation of sequence of gp 195 gene fragments of *Plasmodium falciparum* from Hainan of China.

Schöneck, R. et al. (Lille, France) A *Trypanosoma cruzi* cDNA encoding a GST-like protein.

Masake, R.A., ole-MoiYoi, O., Nantulya, V.M. (Nairobi, Kenya) Characterization of a *Trypanosoma vivax* species-specific antigen and its gene.

Kaneda, Y., Tanaka, T., Tanaka, M. (Isehara, Tsukuba, Japan) Molecular analysis of the gene encoding cysteine proteases from *Trypanosoma rangeli.*

Coombs, G., Robertson, C., Souza, A., Mottram, J. (Glasgow, Scotland) Cysteine proteinases of *Leishmania mexicana*: Enzymes, genes and inhibitors.

Tue, July 27 **C13.** **Genetics I** [Room 7]

16:30 Chairperson: P. Bruns (Ithaka, USA)
Coordinator: G. Steinbrück (Tübingen, Germany)

Bernhard, D., Leipe, D., Schlegel, M. (Tübingen, Germany; Woods Hole, USA) Phylogenetic relationships of ciliates inferred from small subunit ribosomal RNA sequence comparisons.

Gast, R.J., Fuerst, P.A., Byers, T.J. (Columbus, USA) Molecular basis of size variation in *Acanthamoeba* nuclear srDNA.

Hirt, R., Finlay, B.J., Roberts, D.McL., Embley, T.M. (London, Ambleside, UK) A small-scale method for isolation of rRNA genes from ciliates and application to the phylogeny of heterotrichs and karyorelictids.

Hiwatashi, K., Haga, N., Skoblo, I.I. (Ishinomaki, Japan; St. Petersburg, Russia) A CNR mutant discovered in a natural stock of *Paramecium caudatum* and its relation to other CNRs.

La Terza, A., Miceli, C., Luporini, P. (Camerino, Italy) Differential amplification of *Euplotes raikovi* macronuclear pheromone genes: an example of modulated gene expression.

Pawlowski, J., Bolivar, I., Gouy, M., Guiard-Maffia, J. (Geneva, Switzerland; Lyon, France) Molecular phylogeny of Foraminifera inferred from ls rDNA sequences.

Tue, July 27 **C14.** **Protozoa and Pollution** [Room 6]

16:30 Chairperson: E. Piccini (Padova, Italy)
Coordinator: W. Schönborn (Jena, Germany)

Rivera, F., Ramírez, E., Bonilla, P., Alfato, I.A., Calderón, A., Ortíz, R., Gallegos, E., Rodríguez, S. (Mexico City, Mexico) Thermophilic free-living amoebae from a waste-water treatment pilot plant where the root zone method is applied.

Al-Rasheid, K., Sleigh, M. (Southampton, UK) Reduced survival of *Euplotes mutabilis* at concentrations of heavy metals observed in Southampton water.

Itato, P., Ammermann, D., Piccinni, E. (Padova, Italy; Tübingen, Germany) Copper-cadmium accumulation in *Oxytricha granulifera*.

De Gabrieli, R., Piccinni, E. (Padova, Italy) Cadmium-Thionein in *Tetrahymena pigmentosa*.

Tue, July 27 **C15.** **Immunoprotection** [Room 4/5]

16:30 Chairpersons: J. Doyle (Nairobi, Kenya)
H. Dickerson (Athens, USA)
Coordinator: H.-J. Bürger (Giessen, Germany)

Taibi, A., Plumas-Marty, B., Guevara, A., Schöneck, R., Loyens, M., Gras-Masse, H., Bossus, M., Capron, A., Ouaissi, A. (Lille, France) *Trypanosoma cruzi*: Immunity induced in mice and rats by ttypomastigote excretory-secretory antigens and identification of peptide sequence with protective activity.

Posnett, E.S., Shayeghi, M., Canning, E.U. (London, UK) Expression of a protective surface antigen of *Babesia divergens* using a baculovirus expression vector.

Tolle, R., Scarselli, E., Früh, K., Doumbo, O., Koita, O., N'Diaye, M., Fischer, A., Bujard, H. (Heidelberg, Germany; Bamako, Mali) Association between the human humoral response against *P. falciparum* antigens GP 190, TRAP and control of malarial infections: A prospective study.

Lin, T., Dickerson, H., Burkart, M., Clark, T. (Athens, USA) Immunological approaches toward the prevention of *Ichthyophthirius* infection.

Neitz, A.W.H., Herrmann, T.H.A., Coetzee, J., Brett, S., Van Kleef, M. (Pretoria, Onderstepoort, South Africa) Purification of *Cowdria ruminantium* organisms and identification of their cell surface proteins.

Banerjee, D.P., Manohar, G.S., Momin, R.R. (Hisar, Bikaner, Dantiwada, India) Control of tick-borne haemoprotozoan infections by immunization of cattle against ticks.

Tue, July 27 **C16.** **Opportunistic Protozoa and AIDS I** [Room 3]

16:30 Chairpersons: E.U. Canning (London, UK)
M.T. Cushion (Cincinnatti, USA)
Coordinator: E. Tannich (Hamburg, Germany)

Silveira, H., Canning, E.U. (London, UK) A murine model for the human pathogen *Nosema corneum* (Microspora).

Hollister, W.S., Canning, E.U., Colbourn, N.I. (London, UK) Cultivation of microsporidia from human patients with AIDS.

Hannemann, A., Sandfort, J., Gelderblom, H., Schneider, T., Ruf, B. (Berlin, Germany) Intestinal microsporidiosis - prevalence and clinical symptoms in HIV-infected patients in Berlin.

Martinez, A.J., Visvesvara, G.S. (Pittsburgh, Atlanta, USA) Free-living amebic infections: In the immunosuppressed individual and spontaneously arising in individuals without known immunocompromise: Comparison and contrast.

Visvesvara, G.S., Schuster, F.L., Martinez, A.J. (Atlanta, Brooklyn, Pittsburgh, USA) *Balamuthia mandrillaris*, leptomyxid ameba: An agent of amebic encephalitis in humans and animals.

Sandfort, J., Hannemann, A., Stark, D., Gelderblom, H., Ruf, B. (Berlin, Germany) *Enterocytozoon bieneusi* in a patient not infected with HIV.

Roth, A., Karsten, V., Klüppelberg, F., Dzwillo, G., Kiderlen, A.F., Janitschke, K., Höffken, G. (Berlin, Germany) Phagocytosis of *Pneumocystis carinii* (Pc) by human alveolar macrophages (AM).

Bongartz, M., Ghione, M. (Bochum, Germany; Milano, Italy) *Pneumocystis carinii*: Animal model, *in vitro* cultivation and immunological studies.

Thu, July 29 **C17.** **Ecology III** [Room 7]

14:00 Chairperson: J. Patterson (Sydney, Australia)
Coordinator: R. Meisterfeld (Aachen, Germany)

Arndt, H. (Mondsee, Austria) Trophic relationships within the protozooplankton.

Macek, M., Carlos, G., Ramírez, P. (Tlalnepantla, Jiutepec, Mexico) Feeding of ciliates upon *Vibrio cholerae* as part of microbial loop.

Mischke, U. (Berlin, Germany) Heterotrophic flagellates in a hypertrophic lake: succession, composition and herbivores.

Leadbeater, B.S.C., Eccleston, J.D. (Birmingham, UK) The evolutionary and functional significance of the siliceous lorica to planctonic choanoflagellates.

Meisterfeld, R., Wienand, J., Richter, E. (Aachen, Germany) Influence of nutrition on growth and feeding rates of *Arcella hemispherica* and *Netzelia wailesi* (Testaceae lobosia).

Pratt, J.R. (Penn State, USA) Protozoa and the prediction of adverse effects: How redundant are microbial communities?

Monti M. Fondazione Ariotaste, Italy) Populations of ciliates in Terranova bay

Thu, July 29 **C18.** **Sexuality and Nuclear Phenomena** [Room 4/5]

14:00 Chairperson: I.B. Raikov (St. Petersburg, Russia)
Coordinator: D. Ammermann (Tübingen, Germany)

Hanke-Bücker, G., Hauser, M. (Bochum, Germany) Vanadate (VO_4^{3-}) inhibits anaphase A as well as anaphase B.

Raikov, I.B., Mignot, J.-P. (St. Petersburg, Russia; Aubière, France) Comparison of mitosis and meiosis in *Arcella.*

Mikami, K. (Sendai, Japan) Repetitive micronuclear divisions independent of sequential gene expression of the macronucleus during conjugation of *Paramecium.*

Miwa, I. (Mito, Japan) Material basis for the circadian mating rhythms in *Paramecium.*

Ammermann, D. (Tübingen, Germany) Conjugation of the ciliate *Stylonychia lemnae.*

Miyake, A., Harumoto, T. (Camerino, Italy) Cell-cell attraction in the ciliate *Lembadion bullinum.*

Thu, July 29 **C19.** **Action of External Agents (Chemotherapy) I** [Room 6]

14:00 Chairpersons: N. Suzuki (Obihiro, Japan)
R. Fayer (Beltsville, USA)
Coordinator: A. Haberkorn (Leverkusen, Germany)

Schmahl, G., Obiekezie, A., Raether, W., Mehlhorn, H. (Bochum, Germany; Calabar, Nigeria; Frankfurt/Main, Germany) Effects of a new triazine derivative, HOE 092 V, on the plasmodial developmental stages of *Henneguya laterocapsulata* (Myxozoa): An ultrastructural study.

Ruider, S., Schmahl, G., Mehlhorn, H., Schmidt, H., Ritter, G. (Bochum, Melle, Germany) Effects of medicated food flakes containing derivatives of malachite green against *Ichthyophthirius multifiliis* (Hymenostomatida, Ciliophora).

Kaminsky, R., Obexer, W., Schmid, C., Brun, R. (Basel, Switzerland) Recent developments of assays for screening antitrypanosomal compounds.

Brasseur, P., Kapel, N., Favennec, L., Ballet, J.J. (Rouen, Caen, France) *In vitro* drug susceptibility of *Babesia divergens* isolates.

Fayer, R., Ellis, W. (Beltsville, Washington, USA) Chemoprophylaxis for cryptosporidiosis.

Lemeteil, D., Roussel, F., Favennec, L., Ballet, J.J., Brasseur, P. (Rouen, Caen, France) Assessment of candidate anti-cryptosporidial molecules in an immunosuppressed rat model.

Kulda, J., Tomková, E., Tachezy, J. (Prague, Czech Rep.) Experimentally induced resistance to metronidazole in *Trichomonas vaginalis.*

Thu, July 29 **C20.** **Molecular Biology III** [Room 3]

14:00 Chairpersons: R.L. Tarleton (Athens, USA)
R.A. Masake (Nairobi, Kenya)
Coordinator: U. Mackenstedt (Bochum, Germany)

Katakura, K., Ohtomo, H. (Tokyo, Japan) Ornithine decarboxylase gene amplification as extrachromosomal circular and linear DNAs in alpha-difluoromethylornithine resistant *Leishmania.*

Ruyechan, W.T., Williams, N. (Buffalo, USA) DNA-binding proteins of *Trypanosoma brucei.* → C12

Reinwald, E., Shayan, P., Rausch, S. (Berlin, Germany) New sequence motifs in variant surface glycoproteins of *Trypanosoma congolense.*

Dieckmann-Schuppert, A., Bause, E., Schwarz, R.T. (Marburg, Bonn, Germany) Evidence for the occurrence in and synthesis by *Plasmodium falciparum* of O-linked N-acetyl-glucosamine (O-GlcNAc).

Grellier, P., Carcy, B., Précigout, E., Valentin, A., Schrével, J. (Paris, Montpellier, France) Characterization of a new 60 kDa apical protein of *Plasmodium falciparum* merozoites.

Papanastasiou, P., Bruderer, T., Köhler, P. (Zürich, Switzerland) Cysteine-rich variant surface proteins in *Giardia* of animal origin.

Das, P., Chaudhuri, P.P., Sengupta, K., Das, D. (Calcutta, India) Biochemical and immunological studies on plasma membrane antigens of *Giardia lamblia.*

Thu, July 29 **C21.** **Genetics II** [Room 7]

16:30 Chairperson: E. Orias (Santa Barbara, USA)
Coordinator: J.W. Puppe (Münster, Germany)

Gupta, S. (New Delhi, India) Regulation of macronuclear DNA content in the ciliate protozoon *Pseudourostyla levis*, Takahashi.

Hori, M., Takahashi, M. (Tsukuba, Japan) Phenotypic change in syngen specifity of mating type by injection of macronucleoplasm in *Paramecium caudatum.*

Kaczanowski, A. (Warsaw, Poland) Rapid mean of inducing senility in *Tetrahymena thermophila* by treatment of conjugational pairs with the antitubuline drug nocodazole.

Palacios, G., Martin-Gonzalez, A., Benitez, L., Gutierrez, J.C. (Madrid, Spain) Encystment gene expression is regulated by the macronuclear DNA methylation level in the ciliate *Colpoda inflata.*

Suganuma, Y., Tamefusa, N. (Nara, Japan) Electron microscopy of the formation process of gametic pronuclei during conjugation in *Tetrahymena.*

Thu, July 29 **C22.** **Signal Transduction and Transmission** [Room 6]

16:30 Chairperson: R.D. Prusch (Spokane, USA)
Coordinator: H. Plattner (Konstanz, Germany)

Christopher, G.K., Sundermann, C.A. (Auburn, USA) Effect of long-term insulin exposure on receptor induction in *Tetrahymena pyriformis.*

Josefsson, J.-O. (Lund, Sweden) Drug receptors, potassium channels and regulation of pinocytosis in *Amoeba proteus.*

Klopocka, W., Pomorski, P. (Warsaw, Poland) Measurements of the changes in cytoplasmic free calcium during induced pinocytosis in *Amoeba proteus.*

Nilsson, J.R. (Copenhagen, Denmark) Effects of a gold salt and its intracellular distribution in *Tetrahymena.*

Renaud, F., Lebrón, J., Cadilla, C. (San Juan, Puerto Rico) Signal transduction in *Tetrahymena* by a beta-endorphin-like peptide.

Thu, July 29 **C23.** **Parasite-Evertebrate Interactions** [Room 4/5]

16:30 Chairpersons: J. Vávra (Praha, Czech Rep.)
R. Cawthorn (Charlottetown, Canada)
Coordinator: G.A. Schaub (Bochum, Germany)

Nehili, M., Ilk, C., Mehlhorn, H., Njayou, M., Dick, W. (Bochum, Germany; Yaounde, Cameroon; Neuss, Germany) Studies on the survival of different pathogens including protozoans in the leech *Hirudo medicinalis* as a potential vector.

Cawthorn, R., MacMillan, R., McGladdery, S. (, New Brunswick, Canada) Epidemic of pseudoklossiosis (Apicomplexa) in bay scallops *Argopecten irradians* maintained in a warm water recirculating facility.

Xu, Zhenkang (Tianjin, P.R. China) Effects of epizoic ciliate, *Epistylis daphniae*, on its host, *Moina.*

Schaub, G.A. (Bochum, Germany) Classification of pathogenic effects of trypanosomatids on the insect host.

Haffner, A., Hauschild, S., Böse, R., Kahl, O., Schein, E. (Berlin, Hannover, Germany) Investigation of a *Trypanosoma* sp. transmitted by *Ixodes ricinus.*

Heister, N., Böse, R. (Hannover, Germany) Development of *Trypanosoma (Megatrypanum) theileri* in tabanids.

Zapf, F., Schein, E. (Berlin, Germany) Development of *Babesia equi* (Laveran, 1901) in the gut, the hemolymph and the salivary glands of the tick vectors *Hyalomma* spp.

Sulaimann, J., Arshad, A.H. (Malaysia) Life cycle of Lambornella stegomyiae.

Thu, July 29 **C24.** **Opportunistic Protozoa and AIDS II** [Room 3]

16:30 Chairpersons: Y. Nakamura (Tokyo, Japan)
E.. Dei-Cas (Villeneuve d'Ascq, France)
Coordinator: A. Hannemann (Berlin, Germany)

Aliouat, E.M., Mazars, E., Dei-Cas, E., Camus, D. (Villeneuve d'Ascq, Lille, France) Nasal instillation of SCID mice with mouse-, rat- or rabbit-derived *Pneumocystis carinii* reveals a strong parasite specificity.

Dei-Cas, E., Ödberg-Ferragut, C., Mazars, E., Aliouat, E.M., Durand, I., Camus, D. (Villeneuve d'Ascq, France) The taxonomy of *Pneumocystis* at the species level.

Cushion, M.T., Kaselis, M., Stringer, S.L., Stringer, J.R. (Cincinnati, USA) Electrophoretic karyotypes of *Pneumocystis* from several rat strains.

Stringer, J.R., Stringer, S.L., Sunkin, S.M., Cushion, M.T. (Cincinnati, USA) Two probable species of *Pneumocystis* coninfecting laboratory rats.

Stringer, S.L., Baughman, R., Smulian, A.G., Pai, H.-J., Zhang, J.-Z., Cushion, M.T., Stringer, J.R. (Cincinnati, USA) Molecular genetic evidence that *Pneumocystis carinii* from humans and rats are different species.

Nakamura, Y., Wada, M., Kitada, K. (Tokyo, Japan) Genetic diversity of the major cell surface glycoprotein of *Pneumocystis carinii.*

Mazars, E., Ödberg-Ferragut, C., Dei-Cas, E., Camus, D. (Villeneuve d'Ascq, Lille, France) Thymidylate synthase gene: A genomic marker of the *Pneumocystis carinii* diversity.

Cailliez, J.-C., Séguy, N., Aliouat, E.M., Polonelli, L., Dei-Cas, E. (Villeneuve d'Ascq, Lille, France; Parma, Italy) Inhibitory effect of a *Pichia anomala* killer toxin to the *in vitro* rat *Pneumocystis carinii* attachment.

Fri, July 30 **C25.** **Ecology IV** [Room 7]

14:00 Chairperson: B.J. Finlay (Ambleside, UK)
Coordinator: U.-G. Berninger (Bremen, Germany)

Müller, H. (Konstanz, Germany) Laboratory and field observations of the scuticociliate *Histiobalantium* from the pelagic zone of Lake Constance.

Monti, M., Fonda-Umani, S. (Trieste, Italy) Populations of tintinnids in terranova bay.

Eccleston, J.D., Leadbeater, B.S.C. (Birmingham, UK) The complexities of coexistence - a study with six heterotrophic nanoflagellates.

Humby, P.L., Lynn, D.H. (Guelph, Canada) Annual distribution, abundance and biomass of pelagic ciliates in Lake Ontario.

Cleven, E.-J. (Konstanz, Germany) Grazing loss of bacterial production by bacterivorous protozoa in Lake Constance.

Berninger, U.-G., Wickham, S.A., Finlay, B.J. (Bremen, Plön, Germany; Ambleside, UK) Trophic coupling within a freshwater microbial food web.

Lavrentyev, P.J. (Petersburg, Russia) The seasonal pattern of ciliate communities in the lakes of various types: An interlake comparison.

Fri, July 30 **C26. Molecular Biology IV** [Room 3]

14:00 Chairperson: A. Ron (Jerusalem, Israel)
Coordinator: W. Eichler (Düsseldorf, Germany)

Benitez, L., Palacios, G., Martin-Gonzalez, A., Guitierrez, J.C. (Madrid, Spain) Molecular strategies to look for the genes involved in the encystment process of *Colpoda inflata*.

Bini, E., Guerrieri, F., Batistoni, R., Santucci, A., Peccatori, M., Nobili, R., Salvini, M. (Pisa, Siena, Italy) Is H4 macronuclear histone involved in mating-type expression of *Blepharisma japonicum*?

Clark, T, Dickerson, H. (Athens, USA) Novel arrangement of transcribed sequences encoding the i-antigens of *Ichthyophthirius multifiliis*.

Dalle Luecbe, T., Bini, E., Durante, M., Lenzi, P., Santucci, A., Salvini, M. (Pisa, Siena, Italy) Developments of a research about H1 histone in *Blepharisma japonicum* macronucleus.

Di Guiseppe, G. Miceli, C., Luporini, P. (Camerino, Italy) Structural analysis of three macronuclear genes encoding ß-tubulin in the antarctic ciliate *Euplotes focardii*.

Eichler, W. (Düsseldorf, Germany) Polyamine biosynthesis and transcription control in *Tetrahymena thermophila*.

Fri, July 30 **C27. Action of External Agents (Chemotherapy) II** [Room 6]

14:00 Chairpersons: J. Schrével (Paris, France)
B. Betschart (Basel, Switzerland)
Coordinator: W. Raether (Frankfurt, Germany)

Schrével, J., Grellier, P., Sinou, V., Boulard, Y., Frappier, F., Guénard, D. (Paris, Gif-sur-Yvette, France) Inhibitory effects of antimicrotubular drugs on the erythrocytic phase of malaria.

Cenni, B., Betschart, B. (Basel, Switzerland) The distribution pattern of halofantrine in human blood and *Plasmodium falciparum* parasitized red blood cells.

Brasseur, P., Bitsindou, P., Moyou-Somo, R., Penchenier, L., Druilhe, P. (Rouen, France; Brazzaville, Congo; Kumba, Cameroon; Paris, France) Fast emergence of *Plasmodium falciparum* resistance to halofantrine under drug pressure in Africa.

Andrews, B.J., Nkya, W.M.M.M. (Bergen, Norway; Moshi, Tanzania) Bacitracin zinc in the chemotherapy of intestinal amoebiasis.

Gradoni, L., Davidson, R.N., Orsini, S. (Rome, Italy; Harrow, UK) Antileishmanial activity and tissue distribution in mice of liposomal amphotericin B.

Moulay, L., Lawrence, F., Robert-Gero, M. (Gif-sur-Yvette, France) Effect of sinefungin, an antiparasitic nucleoside antibiotic on the secretory pathway of *Leishmania donovani*.

Burri, C., Baltz, T., Girond, C., Doua, F., Welker, H.A., Brun, R. (Basel, Switzerland; Bordeaux, France; Daloa, Ivory Coast; Basel, Switzerland) Pharmacokinetic properties of the trypanocidal drug melarsoprol.

Fri, July 30 **C28. Identification of Species and Strains I** [Room 4/5]

14:00 Chairpersons: H. Hecker (Basel, Switzerland)
K. Vickerman (Glasgow, UK)
Coordinator: D. Mehlitz (Berlin, Germany)

Hecker, H., Bender, K., Betschart, B., Burri, M., Cotti, R., Schlimme, W. (Basel, Switzerland) Man and sea urchin - more closely related than African and American trypanosomes?

Podlipaev, S. (St. Petersburg, Russia) The discrimination of isolates of lower trypanosomatids.

Schottelius, J., Kock, N., Gabius, H.J. (Hamburg, Marburg, Germany) Neoglycoproteins and heparin as tools for the characterization of mono- and digenetic flagellates.

Cherchi, S., Angelici, M.C., Gramiccia, M., Gradoni, L. (Rome, Italy) Analysis of molecular polymorphism inside *Leishmania infantum* complex (Kinetoplastida, Trypanosomatidae).

Momen, H., Cupolillo, E., Grimaldi, G. (Rio de Janeiro, Brazil) Isoenzyme typing of new world *Leishmania* isolates.

Böse, R., Petersen, K., Heister, N. (Hannover, Germany) Characterisation of *Megatrypanum* trypanosomes from European Cervidae.

Branquinha, M.H., Barreto-Bergter, E., Meirelles, M.N.L., Vermelho, A.B. (Rio de Janeiro, Brazil) A comparative study of the protein and glycolipid components between non-pathogenic trypanosomatids and *Trypanosoma cruzi* populations.

Enyaru, J.C.K., Allingham, R., Bromidge, T., Kanmogne, G.D., Pospichal, H., Carasco, J.F. (Tororo, Uganda; Bristol, UK; Basel, Switzerland; Kampala, Uganda) Genetic heterogeneity in *Trypanosoma brucei gambiense* from North-West Uganda.

Fri, July 30 **C29. Morphogenesis** [Room 4/5]

16:30 Chairperson: J. Frankel (Iowa City, USA)
Coordinator: M. Mulisch (Köln, Germany)

Kamra, K., Sapra, G.R. (Delhi, India) Quantitative study on the differential displacements of newly formed frontal ciliature on some oxytrichid ciliates.

Pang, Y., Liu, F. (Shanghai, China) Morphogenesis of the dorsal bristle complex during asexual division on *Euplotes harpa*.

Jerka-Dziadosz, M., Beisson, J. (Warsaw, Poland; Gif-sur-Yvette, France) Abnormal number, timing and location of basal body proliferation in *cr01* mutant of *Paramecium tetraurelia*.

Frankel, J., Jenkins, L.M., Nelsen, E.M. (Iowa City, USA) *Hypoangular*: a gene locus possibly involved in specifying positional information in *Tetrahymena thermophila*.

Mulisch, M., Schermuly, G. (Köln, Germany) Chitin formation in *Eufolliculina uhligi* (Ciliophora; Heterotrichida).

Hulays, S., Ruiz, F., Grain, J., Vigues, B. (Aubière, Gif-sur-Yvette, France) Dynamics of the non-actin filaments of *Climacostomum virens*: study by microinjection of antibodies during oral regeneration.

Fri, July 30 **C30.** **Symbiosis** [Room 7]

16:30

Chairperson: K.W. Jeon (Knoxville, USA)
Coordinator: H.-D. Görtz (Stuttgart, Germany)

Harf, C., Hagnere, C. (Strasbourg, France) Acanthamoeba, Hg-resistance and endosymbiotic bacteria.

Ahn, T.I., Lim, S.T., Leeu, H.K., Jeon, K.W. (Seoul, Korea; Knoxville, USA) Prominent expression of XgroE gene from symbiotic bacteria of *Amoeba proteus* in transformed *E. coli.*

Bernard, C., Fenchel, T. (Helsingor, Denmark) Purple anaerobic *Strombidium* provides an analogy for the origin of mitochondria.

Embley, T.M., Finlay, B.J., Dyal, P.L. (London, Ambleside, UK) Relationships between anaerobic ciliates and their methanogen endosymbionts.

Rosati, G., Verni, F., Lenzi, P. (Pisa, Italy) "Epixenosomes" enigmatic epibionts of the ciliate *Euplodinium itoi*: do they possess tubulin microtubules?

Ponyton, S.L. (Baltimore, USA) A survey of the Protozoa infecting two species of threatened poison dart frogs from Costa Rica.

Fri, July 30 **C31.** **Fine Structure** [Room 6]

16:30

Chairpersons: W. de Souza (Rio de Janeiro,Brazil)
F. Ghaffar (Cairo, Egypt)
Coordinator: F.-R. Matuschka (Berlin, Germany)

Skarlato, S.O., Bobyleva, N.N., Marakhova, N.V. (St. Petersburg, Russia) Chromosomes of the lower trypanosomatids.

Maselli, A., Farmer, M.A., Dickerson, H. (Athens, USA) The ultrastructure of the oral apparatus of the theront and trophont of *Ichthyophthirius multifiliis*, new three dimensional models.

Zgrzebski, G., Raether, W., Hofmann, J., Entzeroth, R. (Bonn, Frankfurt/Main, Germany) Localisation of coccidian antigens during host cell invasion.

Strobel, J.G., Entzeroth, R. (Bonn, Germany) Characterization of a major dense granule protein from *Sarcocystis muris* (Apicomplexa) zystozoites with a monoclonal antibody.

Entzeroth, R., Rick, B., Dubremetz, J.F. (Bonn, Germany; Villeneuve D'Ascq, France) Characterisation of a stage specific 20kDa rhoptry protein of *Eimeria nieschulzi* merozoites.

Horn, K., Ono, K., Mehlhorn, H., Heydorn, A.O. (Berlin, Germany; Tokyo, Japan; Bochum, Germany) How does *in vitro* excystation affect membranes of *Sarcocystis* sporozoites? A TEM study.

Zizka, Z., Pelc, R. (Prague, Czech Rep.) The elemental content in neogregarine *Mattesia dispora* and its host *Galleria mellonella*

Fri, July 30 **C32.** **New Diagnosis Techniques I** [Room 3]

16:30

Chairpersons: B. Gottstein (Zürich, Switzerland)
A. Chauvin (Nantes, France)
Coordinator: B. Reiter-Owona (Bonn, Germany)

Müller, A., Hassl, A., Aspöck, H. (Vienna, Austria) Significance of PCR in rapid diagnosis of acute toxoplasmosis.

Moyad, M.A., Kwa, B., Rose, J. (Tampa, USA) Correlation of an *in vivo* with an *in vitro* assay to detect low numbers of viable *Cryptosporidium* oocysts.

Byers, T.J., Gast, R.J., Ledee, D.R., Awwad, M.H. (Columbus, USA) Nuclear and mitochondrial SSU rDNA and rRNA sequence variation in *Acanthamoeba*.

Gorak, P.M.A., Alexander, J., Canning, E.U. (London, Glasgow, UK) Detection of cytokine mRNA in brain of mice infected with *Encephalitozoon cuniculi* and identification of the immune cell populations associated.

Sat, July 31 **C33.** **Ultrastructure** [Room 3]

14:00

Chairperson: J.P. Mignot (Aubière, France)
Coordinator: K. Eisler (Tübingen, Germany)

Benchimol, M., Gonçalves, N.R., De Souza, W. (Rio de Janeiro, Brasil) Rapid microwave glutaraldehyde fixation of parasitic protozoa.

Ishida, M., Aihara, M.S., Allen, R.D., Fok, A.K. (Honolulu, USA) The decorated spongiome of the contractile vacuole complex in *Paramecium* is the site of fluid segregation.

Kinoshita, E., Inai, Y., Suzaki, T., Shigenaka, Y. (Hiroshima, Japan) Ultrastructure and axopodial contraction of a heliozoan *Actinophrys*.

Klindworth, T., Bardele, C.F. (Tübingen, Germany) An update on the ultrastructure of the oral apparatus and the stomatogenesis on the karyorelictean ciliate *Loxodes striatus*.

Berger, H., Foissner, W., Kohmann, F. (Salzburg, Austria; München, Germany) The ciliate atlas: an unique guide to the identification and ecology of freshwater ciliates.

Radek, R., Hausmann, K. (Berlin, Germany) *Placojoenia sinaica n.g. n.sp.*, a hypermastigote flagellate symbiotic in the lower termite *Kalotermes sinaicus*.

Sat, July 31 **C34.** **Metabolism** [Room 6]

14:00 Chairpersons: P. Köhler (Zürich, Switzerland)
E.S. Kaneshiro (Cincinnati, USA)
Coordinator: A. Dieckmann-Schuppert (Münster, Germany)

Volpe, F., Ballantine, S.P., Delves, C.J. (Langley Court, UK) A multifunctional de novo folate enzyme of *Pneumocystis carinii*.

Kaneshiro, E.S., Zhou, L.H., Gupta, A., Rudney, H. (Cincinnati, USA) HMG-CoA reductase activity of *Pneumocystis carinii*.

Ellis, J.E., Kaneshiro, E.S. (Cincinnati, USA) Coenzyme Q homologs in some parasitic protists.

Bruchhaus, I., Tannich, E. (Hamburg, Germany) Regulation of an iron-containing superoxide dismutase in *Entamoeba histolytica*.

Saxena, D.M. (Delhi, India) Accumulation, metabolism and effects of pesticides on protozoans and bacteria: A critical appraisal.

Sat, July 31 **C35.** **Cultivation** [Room 7]

14:00 Chairpersons: R. Brun (Basel, Switzerland)
N. Lanners (Covington, USA)
Coordinator: R. Entzeroth (Bonn, Germany)

Binz, N., Staton, J., Hobbs, R.P., Lymbery, A.J., Thompson, R.C.A. (Murdoch, Bunbury, Australia) Growth characteristics of twelve isolates of *Giardia duodenalis*.

Nugues, C., Favennec, L., Magne, D., Chochillon, C., Kapel, N., Buraud, M., Gobert, J.G. (Paris, Rouen, France) Alteration of Caco2 cell monolayer electrical resistance by *Giardia*.

Schuster, F.L., Rahman, M. (Brooklyn, USA) Chemotactic responses of *Acanthamoeba castellani*.

Ghosh, T.N., Ghosh, E. (Calcutta, India) Cultivation of *Plasmodium falciparum* collected from a tribal population of Eastern India: An experience.

Bhattacharya, A., Bandyopadhyay, P. (Calcutta, India) Amino acids and sugars: Role in metacyclogenesis of *Leishmania* spp.

Vickerman, K., Appleton, P.L., Field, R.H. (Glasgow, UK) Cultivation and development *in vitro* of a syndinean dinoflagellate *(Hematodinium sp.)* from the Norway lobster *(Nephrops norvegicus)*.

Sat, July 31 **C36.** **Identification of Species and Strains II** [Room 4/5]

14:00 Chairpersons: R.C.A.Thompson (Perth, Australia)
M.C. Angelici (Rome, Italy)
Coordinator: J. Schottelius (Hamburg, Germany)

Sparagano, O. (Lyon, France) Differentiation of *Naegleria fowleri* from the other Naegleriae by using monoclonal antibodies.

Mackenstedt, U., Mehlhorn, H., Johnson, A.M. (Sydney, Australia; Bochum, Germany) Use of randomly amplified polymorphic DNA fragments to differentiate between pathogenic and apathogenic strains of *Entamoeba histolytica*.

Morgan, U.M., Constantine, C.C., Greene, W.K., Thompson, R.C.A. (Perth, Australia) RAPD (Random amplified polymorphic DNA) analysis of *Giardia* and *Cryptosporidium* DNA.

Yoshikawa, H., Li, X., Becker-Hapak, M., Graves, D.C. (Nara, Japan; Oklahoma, USA) Immunoblot analysis of *Blastocystis* antigens by polyclonal and monoclonal antibodies.

Tenter, A.M., Ellis, J.T., Whitworth, G., Johnson, A.M., Baverstock, P.R. (Hannover, Germany; Sydney, Australia; Lismore, Australia) Phylogenetic relationships of *Sarcocystis* species based on ribosomal RNA sequences.

Goggin, C.L. (Brisbane, Australia) Species distinction using the rDNA internal transcribed spacers (ITS) of isolates of *Perkinsus* spp. (Protista, Apicomplexa).

Sa, July 31 **C37.** **Taxonomy and Nomenclature** [Room 6]

16:30 Chairperson: W. Foissner (Salzburg, Austria)
Coordinator: N. Wilbert (Bonn, Germany)

Corliss, J.O. (Albuquerque, USA) A report on the classification of the protists *sensu lato* within several diverse high-level taxa of the eukaryota.

Farmer, M.A. (Athens, USA) Ultrastructure of a free living retortamonad.

Jacob, N.K., Kamra, K., Sapra, G.R. (Delhi, India) Comparative characterization of four species of the genus *Stylonychia*.

Kitazato, H., Takahara, K., Tsuchiya, M. (Shizuoka, Japan) Biospecies of *Glabratella* (Foraminifera) judging from interbreeding experiments.

Preparata, R.M., Simon, E.M., Nanney, D.L. (Goodwin, USA) Relative rRNA diversity within the tetrahymine ciliated protozoa and the genera *Paramecium* and *Colpoda*.

Valbonesi, A., Luporini, P. (Camerino, Italy) The subtypes of the "double" *Euplotes* argyrome have no structural basis.

Small, E.B et al. the vertical occurrence of scuticociliates of the continental shelf of USA at depths of 2000 feet.

Sat, July 31 **C38.** **Microspora and Myxozoa** [Room 7]

16:30 Chairpersons: J.I.R. Larsson (Lund, Sweden)
J. Lom (Budejovice, Czech Rep.)
Coordinator: G. Schmahl (Bochum, Germany)

Sokolova, J.J., Issi, I.V., Entzeroth, R. (St. Petersburg, Russia; Bonn, Germany) One more "Nosema" with two types of sporogony.

Larsson, J.I.R. (Lund, Sweden) On a new microsporidium of *Aedes vexans* and the diagnostic potential of the microsporidian octospore.

Bylén, E., Larsson, J.I.R. (Lund, Sweden) The first species of the genus *Pilosporella* (Microspora) isolated from midge larvae found in Sweden.

Bronnvall, A., Larsson, J.I.R. (Lund, Sweden) A new diplokaryotic microsporidian infecting Ostracoda (Crustacea).

Desportes-Livage, I., Chilmonczyk, S., Hedrick, R.P., Ombrouck, C., Hilmarsdottir, I., Gentilini, M. (Paris, Jouy-en-Josas, France; Davis, USA) Comparative development of the extrusion apparatus of the spore in *Enterocytozoon bieneusi* and *E. salmonis* (Microsporidia, Enterocytozoonidae) respectively reported in HIV infected patients and in salmonid fish.

Vávra, J. (Prague, Czech Rep.) The extrusion apparatus (EA) of microsporidian spore.

Kalavati, C. (Visakhapatnam, India) Myxosporean parasites of mullets from marginal marine environments in India.

Padma Dorothy, K., Kalavati, C. (Visakhapatnam, India) Interspecific relationships among myxosporean parasites of the mullet *Liza macrolepis* (Smith).

Lom, J., Dyková, I. (Budejovice, Czech Republic) Present problems in the myxosporean genus *Myxobolus*.

Sat, July 31 **C39.** **Toxoplasmosis** [Room 4/5]

16:30

Chairpersons: H. Aspöck (Vienna, Austria)
L. Choromanski (Shawnee Mission, USA)
Coordinator: K. Janitschke (Berlin, Germany)

Bohne, W., Groß, U., Heesemann, J. (Würzburg, Germany) Mechanisms involved in stage conversion of *Toxoplasma gondii*.

Groß, U., Bohne, W., Bormuth, H., Gaissmaier, C. (Würzburg, Germany) Characterization of *Toxoplasma gondii* stage-specific monoclonal antibodies generated from rats.

Windeck, T., Müller, W.A., Groß, U. (Würzburg, Magdeburg, Germany) Molecularbiological characterization of strain-specific differences of *Toxoplasma*.

Hassl, A., Manafi, M., Sommer, R., Harmer, C., Aspöck, H. (Vienna, Austria) Differentiation of *Toxoplasma gondii* strains by enzymatic profiling.

Tenter, A.M., Vietmeyer, C., Lehmacher, W., Janitschke, K., Johnson, A.M. (Hannover, Berlin, Germany; Sydney, Australia) ELISAs based on recombinant antigens for seroepidemiological studies on *Toxoplasma gondii* infections in cats.

Mercier, C., Lecordier, L., Capron, A., Cesbron-Delauw, M.-F. (Lille, France) Characterization of GRA2, a dense granule antigen of *Toxoplasma gondii*.

Chinchilla, M., Guerrero, O.M. (San José, Costa Rica) Natural resistance of rats against *Toxoplasma gondii* as compared with mice susceptibility.

Zenner, L., Darcy, F., Cesbron-Delauw, M.-F., Capron, C. (Lille, France) An experimental model of congenital toxoplasmosis in the rat: Transmission to fetus and protection.

Choromanski, L., Freyre, A., Fishback, J.L., Popiel, I. (Shawnee Mission, Kansas City, Fort Collins, USA) Vaccination of cats with tissue cysts, bradyzoites and tachyzoites of the T-263 strain of *Toxoplasma gondii*.

Sat, July 31 **C40.** **New Diagnosis Techniques II** [Room 3]

16:30

Chairpersons: N. Müller (Bern, Switzerland)
P.P. Andrade (Recife, Brazil)
Coordinator: E. Reinwald (Berlin, Germany)

Gramiccia, M., Maroli, M., Angelici, M.C., Khoury, C., Raoli, S. (Rome, Italy) Use of a specific kinetoplast DNA probe for the detection of *Leishmania infantum* in the phlebotomine vector.

Röllinghoff, M., Andrade, P.P., Andrade, C. (Erlangen, Germany; Recife, Brazil) Recombinant leishmanial heat shock proteins in the diagnosis of visceral leishmaniasis.

Villas Boas, M.H., Barreto-Bergter, T. (Rio de Janeiro, Brazil) Reactivity of chagasic sera with crude and highly purified glycosphingolipid fractions from *Trypanosoma cruzi* epimastigotes as detected by ELISA.

Guhl, F., Jaramillo, C., De Sánchez, N., Figueroa, R. (Santafé de Bogotá, Columbia) Immune response to experimental and human *Trypanosoma rangeli* infection and its epidemiological implications.

Majiwa, P.A.O., Maina, M., Waitumbi, J.N., Mihok, S., Zweygarth, E. (Nairobi, Kikuyu, Kenya; Berlin, Germany) Application of modern techniques to probe population genetic structure of *Trypanosoma congolense*.

Singh, V., Chaudhari, S.S., Kumar, S., Chhabra, M.B., Gupta, S.K. (Nagar, Hisar, India) Efficacy of diagnostic tests for *Trypanosoma evansi* infections in camels, horses and buffaloes.

Film/Video-Session I

Tue, July 27; 19:00 [Room 7]

Chairperson: H. Gundlach (Oberkochen, Germany)
Coordinator: K. Hausmann (Berlin, Germany)

Gundlach

Greulich, K.O., Leitz, G., Harim, A., Monajembashi, S., Weber, G., Schütze, K., Schliwa, M., Kaeding, R., Kerlen, G., Gundlach, H. (Jena, Heidelberg, Stuttgart, Harlaching, München, Göttingen, Oberkochen, Germany) Manipulation of cells, organelles and genomes by laser microbeam and optical trap.

Pauli, W., Berger, S., Jaskulka, L., Schmitz, S. (Berlin, Germany) *Tetrahymena* as a biosensor in environmental risk assessment.

Hong, L., Lin, Y. (Fujian, P.R. China) Studies on the genus *Leucocytozoon* from birds and the life cycle of *Leucocytozoon sabrazesi* from chicken in Fujian, China.

Li, L. (Wuhan, P.R. China) Video film on the morphology and life cycle of a new ciliate *Ophryoglena brachioni* sp. nov.

Lin, Y., Hong, L. (Fujian, P.R. China) On the exo-erythrocytic schizogony of *Haemoproteus columbae* in pigeon.

Kuhlmann, H.-W. (Münster, Germany) Phototaxis in ciliates.

Posters

P1. Taxonomy and Nomenclature

Agatha, S., Riedel-Lorjé, J.C., Vaessen, B., Hesse, K., Egge, B. (Hamburg, Büsum, Germany) Taxonomical and ecological studies on *Strombidium conicum*.

Blatterer, H., Foissner, W. (Linz, Austria) Revision of the genus *Gastronauta*.

Kazubski, S.L. (Waszawa, Poland) Remarks on the descriptions of the trichodinas for taxonomical purpose.

Krainer, K.-H. (Wien, Austria) Taxonomic and quantitative aspects of some planktonic strombidiids from dredgered groundwater ponds.

Martín-Cereceda, M., Rodríguez, B., Campos, I., Calvo, P., Guinea, A., Serrano, S., Fernández-Galiano, D. (Madrid, Spain) Characterization of a ciliate belonging to the genus *Acineria* found in activated sludge plants of Madrid.

Shi, X. (Harbin, China) How to distinguish the natural groups in hypotrichous ciliates.

Tong, S. (Southampton, UK) *Developayella elegans* gen.nov., sp.nov., a new type of heterotrophic flagellate from marine plankton.

Vørs, N. (Sidney, Australia) The biogeography of marine water-column heterotrophic flagellates. Do special rules apply?

Yu, Y.H., Chen, Y.Z. (Wuhan, China) Isozymic comparisons between *Tetrahymena shanghaiensis* and other sibling species of *Tetrahymena pyriformis* complex.

Zölffel, M. (Berlin, Germany) The ultrastructure of *Solenicola setigera*.

Sergejeva, G. (St. Petersburg, Russia) Ignorance of the spectrum of obligate morphoforms in the life cycle of ciliate can lead occasionally to taxonomic errors.

P2. Control of Cell Cycle

Barbier, M., Albert, M., Soyer-Gobillard, M.O. (Paris, France) The molecular control of the cell cycle in dinoflagellates.

Beylina, S., Baranowski, Z., Sikora, J. (Pushchino, Russia; Warszawa, Poland) Autocrine control of encystment in *Physarum polycephalum* microplasmodia.

Bhaud, Y., Barbier, M., Soyer-Gobillard, M.O. (Paris, France) A refined study of the complex cell cycle of the dinoflagellate *Crypthecodinium cohnii*: evidence for the presence of eucaryotic transition points.

Fujishima, M., Ogawa, E., Sagata, N. (Yamaguchi, Kurume, Japan) Meiosis-reinitiation-inducing factor (MRIF) of *Tetrahymena* induces MOS-Synthesis and dephosphorylation of CDC2 and MPF-activity in *Xenopus* oocyte.

P3. Morphogenesis

Chessa, M.G., Delmonte Corrado, M.U., Carcupino, M., Pelli, P. (Genova, Viterbo, Italy) An ultrastructural study of resting encystment in *Colpoda inflata*.

Dieckmann, J. (Münster, Germany) Life cycle of *Keronopsis wetzeli*.

Klein, S., Mulisch, M. (Köln, Germany) Aspects of pattern formation and morphogenesis during the unequal cell division in the heterotrich ciliate *Eufolliculina uhligi*.

Sapra, G.R., Kamra, K., Gupta, R. (Dehli, India) Developmental strategies for cortical patterning in *Onychodromus indica*.

Schermuly, G., Mulisch, M. (Köln, Germany) Are chitoproteins involved in chitinsynthesis of *Eufolliculina uhligi*?

Song, W. (Qingdao, China) Morphogenesis of the marine ciliate *Diophrys oligothrix*.

P4. Evolution

Baroin Tourancheau, A., Perasso, R., Adoutte, A. (Orsay, France) A molecular phylogeny of ciliates: implications on the codon usage within the phylum.

Larsen, H.F. (Faaborg, Denmark) On the morphology and cell division of *Anigsteinia salinara*.

Springer, N., Ludwig, W., Amann, R., Görtz, H.-D., Schleifer, K.-H. (München, Stuttgart, Germany) Phylogeny and in situ identification of bacterial endosymbionts in protozoa.

P5. Physiology of Cilia and Flagella

Hamasaki, T., Barkalow, K., Satir, P. (Bronx, USA) Regulation of 22S *Paramecium* ciliary outer arm dynein by a phosphorylation of a 29kD dynein regulatory light chain.

Rüffer, U., Nultsch, W. (Marburg, Germany) Comparison of the breast-stroke and the undulatory type of flagellar beating in *Chlamydomonas reinhardtii*. High-speed kinematography of cells held on a micropipette.

P6. Signal Transduction and Transmission

Pernberg, J. (Bochum, Germany) Control of ciliary activity in *Didinium*.

Weskamp, M. (Bochum, Germany) Fluorometry and electrophysiology of Ca-transients in *Stylonychia mytilus*.

Wood, D.C. (Pittsburgh, USA) Excitation-contraction coupling in *Stentor*.

P7. Motility, Orientation and Behaviour

Bräucker, R., Machemer, H. (Bochum, Germany) Gravireponses of *Didinium* under weightlessness and hypergravity conditions.

Checcucci, G., Franceschi, D., Ghetti, F., Gioffré, D., Lenci, F., Nobili, R., Ricci, N. (Pisa, Italy) Effects of extracellularily generated reactive oxygen species on the motile behaviour of *Blepharisma japonicum.*

Donath, R., Hemmersbach-Krause, R., Seibt, D., Briegleb, W. (Köln, Germany) Spatial orientation of ciliates under hypergravity.

Hemmersbach-Krause, R., Briegleb, W., Häder, D.-P. (Köln, Germany) Gravity-dependant behaviour of *Paramecium.*

Hülsmann, N., Grebecki, A. (Berlin, Germany; Warsaw, Poland) Lobopodia and lamellipodia induced in a filopodial organism *(Vampyrella lateritia).*

Kihara, A., Ishii, K. (Tokyo, Japan) Separations of the different time-course events from the amoeboid movements.

Kölnidai, L. (Budapest, Hungary) Chemotaxis of *Tetrahymena:* insulin variants for therapeutic use and hormonal imprinting.

Koppelhus, U., Hellung-Larsen, P., Leick, V. (Copenhagen, Denmark) An improved quantitative assay for chemotaxis in *Tetrahymena.*

Kuhlmann, H.-W. (Münster, Germany) Phototaxis in ciliates.

Leick, V., Rosenberg, J., Koppelhus, U. (Copenhagen, Denmark) Cilia-mediated oriented chemokinesis in *Tetrahymena thermophila.*

Machemer-Röhnisch, S., Machemer, H. (Bochum, Germany) Behavioural responses of *Paramecium* to normal and raised gravity.

Nagel, U., Machemer, H. (Bochum, Germany) Observations on membrane control of ciliary activity and locomotion in *Loxodes* using DC field stimulation.

Suzaki, T., (Hiroshima, Japan) Dielectric monitoring of cell shape change in *Euglena.*

Dovgal, I.V. (Kiev, Ukraine) Boundary layer examination as an approach to sitting infusoria ecology study.

P8. Ecology

Anderson, O.R. (Palisades, USA) Radiolarian ecology and water mass indicator quality.

Bonkowski, M., Jentschke, G., Scheu, S. (Göttingen, Germany) Influence of rhizosphere and mycorrhiza of pine seedlings on soil protozoa.

Brockmeier, M. (Marburg, Germany) *Dendrocometes paradoxus* living on three different gammarus species in Mittelhessen, Germany.

Eisler, K., Grell, K.G. (Tübingen, Germany) Plasmodial protists of the sea.

Estehan, G., Téllwz, C., Finlay, B.J. (Ambleside, UK; Madrid, Spain) Diversity of protozoa and their food niches in the diatom-rich superficial sandy sediment of a Spanish stream in winter.

Klaas, C. (Bremerhaven, Germany) Do protozoan grazers suppress diatom blooms in the southern ocean?

Lehle, E. (Ulm, Germany) Influence of compost and lime on population structure of forest soil ciliates.

Lucchesi, P., Santangelo, G. (Pisa, Italy) An experimental approach to weight hydrodynamism effect on interstitial ciliate communities.

Lücrs, J., Steinke, M., Kirst, G.O. (Bremen, Germany) Production of acrylic acid in laboratory grazing experiments with *Euplotes vannus* minkjiewicz as a predator.

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Guhl, B.E., Finlay, B.J., Schink, B. (Konstanz, Germany; Ambleside, UK) Hypolimnetic communities of anaerobic ciliates.

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P11. Pollution

Bao, W., Wang, Q. (Harbin, China) The flagellata in the heavily polluted section of Majiagou river in Harbin city.

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Görtz, H.-D., Springer, N., Schmidt, H.J. (München, Stuttgart, Münster, Germany) Close relationship of two R-body producing bacteria in *Paramecium caudatum* and in a *Paramecium aurelia* species.

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P13. Genetics

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P14. Sexuality and Nuclear Phenomena

Hahn, C., Jauker, F. (Giessen, Germany) A computer simulation of clonal survival of amitotically dividing macronuclei.

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P16. Advances in Microscopy

Febvre, J., Inoué, S., Febvre-Chevalier, R., Knudson, R., Takeshita, T. (Villefranche/Mer, France; Bridgewater, Woods Hole, USA) In vivo visualization of intercalary microtubule breakdown by polarizing microscopy and very high speed video.

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Gundlach, H. (Oberkochen, Germany) Optoelectronic imaging for the detection of multiparameter florescence microscopy.

Leitz, G., Schnepf, E., Greulich, K.O. (Heidelberg, Germany) Laser microsurgery and optical trapping in *Pyrocystis noctiluca.*

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P17. Techniques in Diagnosis

Barría de Cao, M.S., Pettigrosso, R. (Bahía-Blanca, Argentina) Estuarine choreotrichida and oligotricida studied with protargol and scanning microscopy.

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P18. Cytoskeleton

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P19. Ultrastructure

Affa'A, F.-M., Mignot, J.P. (Yaoundé, Cameroun) Ultrastructural study of *Protoopalina drachi.*

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P21. Intracellular Traffic

Ali, R.F., Bala, N.P., Aihara, M.S., Allen, R.D., Fok, A.K. (Honolulu, USA) A monoclonal antibody study of the phagosomal membranes in *Paramecium*.

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P23. Action of External Agents and Drugs

Cao, T., Wang, S., Shou, P., Tang, R., Xaio, G. (Beijing, China) Preparation and characterization of Ytterbium antibody against *Tetrahymena* and *Ochromonas*.

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P24. Life Cycles

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P27. Epidemiology

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P28. Opportunistic Protozoa and AIDS

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Supporting Program

Monday, 26th July 1993

9.30 - 13.00 h
Super City Sightseeing Tour Berlin

Travel by coach to the centre of Berlin passing the famous Kurfürstendamm and the cultural heart of West Berlin: the Philharmonie, the Cultural Forum, the State Library and the National Galerie.
Then on to the former border crossing, Checkpoint Charlie, to the historical center of Berlin East. See such famous buildings as the State Opera House, Humbold University, the Museum of German History (formerly the Zeughaus), the Red City Hall and the famous Pergamon Museum.
Drive along the famous boulevard "Unter den Linden", pass the Brandenburg Gate and the Reichstagsbuilding. On the way back see the Bellevue Palace, the Victory Column and Charlottenburg Palace.

Price per person: DM 43,-

Tuesday, 27th July 1993

9.30 - 16.30 h
Potsdam

Depart on private deluxe motorcoach to Potsdam, the city which bests reflects the brilliance of Prussian history in many different periods. Visit to Palace Sanssouci and its beautiful garden with its impressive terrace and fountains, one of the most harmonious blendings of 18th and 19th century architecture, sculpture, painting, interior decoration and garden design in all of Germany; or the New Palace, the last and most impressive 18th century palace located in Sanssouci Park, built as the summer residence for the royal family.
Lunch at the restaurant of the Palace Cecilienhof.
Visit to Palace Cecilienhof, built between 1913 and 1917 in the style of an English prince country manorhouse for the family of the Crown Prince. In 1945 the Potsdam Agreement was signed between the Allied Powers here.
Afterwards short bus tour through Potsdam. Pass the early 18th century settlement "Holland Quarter" with its colorful houses and the Russian colony "Alexandrovka".

Price per person incl. lunch: DM 140,-

Wednesday, 28th July 1993

9.30 - 13.30 h
Supercity Sightseeing Tour Berlin

For description please see above
Price per person: DM 43,-

9.30 - 13.30 h
Visit to the "Museumsinsel"

The Museum Island remains one of the world's significant museum complexes. As a part of the museum center you will visit the "Pergamon Museum" with the world-famous Pergamon Altar and the Ishtar Gate.
Afterwards you will see the "Bode Museum", named for the General Director of Berlins museums, Wilhelm von Bode. It houses the Egyptian Museum with a notable papayrus collection, the early Christian-Byzantine Collection, the Painting Gallery, the Sculpture and the Numismatic Collection.

Price per person: DM 57,-

10.00 - 14.00 h
Berlin from the Spree Canals

Berlin was once Germany's second largest inland port. And the city still has more bridges than Venice!
Travel by motorcoach to the landing stage Schloßbrücke. There you will board a boat. See Berlin from an unusual and fascinating perspective during this cruise through some of the Spree River canals. You will see Charlottenburg Palace, then travel along the Landwehrkanal through the Oberschleuse lock into East Berlin. You will pass the Palast der Republik, the former house of deputies of East Germany, the Berlin Cathedral, and the Museum island, site of one of the world's richest museum complexes.

Price per person: DM 67,-

9.30 - 16.30 h
Potsdam

For description please see above
Price per person: DM 140,-

9.00 - 19.00 h
Spree Forest

Situated about 100 kilometers south-east of Berlin, the Spree Forest is one of the most unique water landscapes of central Europe. Its uniqueness springs from its wildness and the fact that the River Spree divides into many small branches here. A boat trip down the quiet waterways which flow through the labyrinth of the Spree Forest, passing thatched farm houses and

stretches of what is almost primeval forest, is a very special experience. Before going on to lunch you will visit the Lehde Open-Air-Museum.

Price per person incl. lunch: DM 150,-

9.30 - 17.30 h
Day Excursion to the "Schorfheide"

The excursion leads through the region "Mark Brandenburg" which is known for its many lakes, hills and forests. You will visit among others the ruin of Monastery Chorin, an important piece of North German Gothic architecture built in brick. During a guided tour through the nature reserve park of the "Schorfheide" you will see the typical local plants and wild life. The "Schorfheide" is famous for its wild life and has been an outstanding hunting area for hundreds of years. We continue with our tour passing the medieval cities of Templin and Prenzlau.

Price per person incl. lunch: DM 140,-

Friday, 30th July 1993

9.30 - 13.30 h
Visit to the "Museumsinsel"

For description please see above
Price per person: DM 57,-

Saturday, 31th July 1993

9.00 - 19.00 h
Spree Forest

For description please see above
Price per person: DM 150,-

All tours start and end at ICC Berlin.

Acknowledgement

We thank the following companies and instituions for their support to our Congress.

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Notice

The following symposium has been added to the scientific programme:

Tue, July 27	**V**	**Rapid Signal Transduction**		[Room 6]
19:00		Chairpersons:	D. Nelson	(Madison York, USA)
			Y. Naitoh	(Tsukuba, Japan)
		Coordinator:	H. Plattner	(Konstanz, Germany)

Naitoh, Y., Katoh, K. (Tsukuba, Japan) A rapid intracellular Ca^{2+} signal conduction for controlling a cellular contraction in *Vorticella.*

Adoutte, A. (Gif-sur-Yvette, France) Direct visualization of a large Calcium compartment in *Paramecium.*

Nelson, D. (Madison, USA) Response to extracellular GTP in *Paramecium:* Behaviour and electrophysiology.

Hamasaki, T. (Einstein, USA) Regulation of 22S *Paramecium* ciliary outer arm dynein by phosphorylation of a 29 kDa dynein regulatory light chain.