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Editorial note

In this issue, Sergey A. Grinshpun and Tiina Reponen present an interesting contribution about the importance of the physical principles of aerosol science in order to achieve accurate results in aerobiological monitoring.

Continuing on the themes started in the issue 56, Shigeto KAWASHIMA from Japan, gives the opportunity to know the most important topics in the science of Aerobiology in this country.

Carmen Galán informs us about the 28th International Union Biological Sciences (IUBS) General Assembly and the International Conference on Biological Sciences held in Egypt last January.

Information on the new book "Plantes, pollen et allergies" edited in Switzerland, and the summaries of two new Doctoral Thesis defended in the Universities of León and Córdoba (Spain) are also included.

This issue contains information about future aerobiological events. The closest will be 11th International Palynological Congress that will be held in Granada (Spain) at the beginning of the next July and the 10th Nordic Symposium on Aerobiology in Turku, Finland in August. Both will give us the opportunity to interact with colleagues and friends from different parts of the world and to hear about new perspectives and advances in Aerobiology.

Please pay attention to the rules and the deadline when submitting the application form for the Young Aerobiologist Award (Pag. 4).

As it was announced in previous issues, IAA Newsletters are available in electronic format at the IAA website:

<http://www.isac.cnr.it/aerobio/iaa/IAABULL.html> and the Galician Aerobiology Network site (<http://www.usc.es/aerobio>). Printed copies will only be sent to IAA members on request.

We are now at the end of this academic year, and looking back I believe that it has been very successful one for our Association. I wish every one will have relaxing holidays, and come back with new energy to tackle new and fascinating aerobiological challenges.

Once again, my thanks to everyone who has contributed to this issue.

Looking forward to hearing from you,

Victoria Jato
Newsletter Editor
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SAMPLING OF BIOLOGICAL PARTICLES FROM AMBIENT ENVIRONMENT: PHYSICAL PRINCIPLES, EFFICIENCY, AND EXPOSURE ASSESSMENT

By

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Recent developments in aerobiology have once again affirmed the multidisciplinary character of this field, which benefits from the knowledge generated in applied microbiology, palynology, as well as atmospheric physics and chemistry. Another scientific field, which has emerged and fully developed through multidisciplinary interaction, is aerosol science. The physical principles of aerosol science contribute to one of the most important aspects of aerobiology: the measurement of airborne biological particles, such as pollen, fungi, and bacteria. Indeed, the sampling of bioaerosol particles utilizes the same physical mechanisms as those used for non-biological aerosols. The sampling phases include aspiration from the ambient environment into the inlet of a measurement device, the transport through the inlet to the collection area, and the bioaerosol collection on a specific medium. In addition to physical considerations, the microbiological mechanisms are addressed when there is a need to ensure the survival or biological potency of bioaerosol particles during and after sampling. Furthermore, sample handling, storage, and the bioaerosol sample analysis are usually different from the procedures used in general aerosol sampling.

The overall physical sampling efficiency is a product of the aspiration (E_a), transmission (E_t), and collection (E_c) efficiencies. Each of these components depends on the particle aerodynamic size, wind velocity and direction, as well as the inlet characteristics, such as the air velocity at the inlet, inlet dimensions and orientation.

Aerosol sampling of outdoor or indoor microorganisms and aeroallergens is challenging due to a wide size range of the particles (from submicron bacteria to pollen grains of about 100 μm). An additional challenge is associated with the variation in samplers' aspiration efficiency caused by changing wind conditions, especially in case of outdoor bioaerosol sampling. The aspiration efficiency differs from 100% if the inlet sampling velocity is different from the wind velocity or if the sampling is not isoaxial. This may result in either under- or over-estimation of the bioaerosol concentration, and the effect is greater for larger particles. For the Burkard 1-day and 7-day recording spore trap (10 LPM, 2x14 mm slit), operating facing a 10 m/s wind, the aspiration efficiency is approximately 99.9% when it samples particles of 2.1–2.3 μm in aerodynamic diameter

[*Penicillium brevicompactum*, as listed by Reponen et al. (2001)]. The E_c -value decreases to ~63% when the particle size increases to 65 μm [Pinaceae pollen, as calculated by Adhikari et al. (2003)]. The transmission efficiency of most bioaerosol samplers is close to 100% for the particles ranging from 0.2 to 15–20 μm , which essentially covers all bacterial and fungal sizes. Pollen grains are large enough to be subjected to the wall losses inside the sampling line. For example, E_t of the horizontally oriented Burkard inlet is ~90% for 24- μm *Ambrosia* grains and about 75% for 65- μm Pinaceae particles. The collection of ambient bioaerosol particles is often performed utilizing the particle inertia. When collecting onto a solid surface or into a liquid using inertia, the collection efficiency generally increases with increasing particle size (unlike the aspiration and transmission efficiencies). This is well represented by the impaction curve of the Burkard sampler, which predicts about 100% collection efficiency for particles larger than 15 μm , but significantly poorer collection for smaller particles.

The rotating-arm impactor (commercially available as the Rotorod® Sampler) is a special case as it does not utilize an active sampling (there is no air flow through it), but collects airborne particles on the rotating rods. The collection efficiency depends on the rotation velocity, ambient wind velocity, and the particle size (DiGiovanni 1998, Adhikari et al. 2003). The sampling efficiency of the Rotorod has been found to vary with environmental conditions. Thus, it is difficult to predict its efficiency using available theoretical models (DiGiovanni 1998).

The growing concern for human exposure to bioaerosols has created demand for advanced, more reliable and more efficient monitoring methods. Individual exposure to bioaerosols can best be evaluated by the use of personal aerosol monitors, as these samplers track the effects of human time-activity patterns. Few personal samplers have been tested for measuring bioaerosols. For example, Rautiala et al. (1998) used the 37-mm filter cassette for the personal sampling of fungal spores; Kenny et al. (1999) tested a modified IOM sampler for the measurement of airborne bacteria and fungi; Agranovski et al. (2002) proposed a porous medium submerged in a liquid layer for the personal sampling of fungal spores and bacteria; Adhikari et al. (2003) investigated the performan-

ce of the Button Personal Inhalable Sampler and the Rotorod Sampler for the measurement of the fungal spores and pollen grains in an ambient air environment. Adhikari et al. (2003) concluded that the pollen counts obtained with the Button and the Rotorod samplers were comparable but a significantly higher mold counts were obtained with the Button Sampler. Toivola et al (2002) used the Button Sampler for personal and stationary sampling and detected higher concentrations of viable fungal spores in personal samples than in stationary samples. This suggests that stationary sampling may underestimate the true personal exposure to bioaerosols. Thus, it is important to develop and validate adequate personal sampling methods for biological particles.

Any sampler used for bioaerosol sampling should be properly characterized. Minimum testing should include the overall sampling efficiency curve as a function of aerodynamic size of particles. Generally, to improve the performance of a bioaerosol sampler, each component of the overall sampling efficiency, such as E_s , E_p , and E_c , should be investigated separately, and the sampler's design should be optimized so that each of the three components would be as close to 100% as possible. Some theoretical and semi-empirical models can be used for determining E_s , E_p , and E_c (Grinshpun et al.1994;

Baron and Willeke 2001). Sampling devices should be selected based on the anticipated size of the biological particles of interest. Finally, the proper use of equipment (flow rate calibration, use of adhesive, orientation) is important to obtain representative bioaerosol samples.

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Aerobiology in the world Japan

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First, I must reluctantly admit that the term "aerobiology" is not well known in Japan. In 1973, Dr. Eiichi Inoue, a specialist in atmospheric turbulence, introduced the term in the *Japanese Journal of Agricultural Meteorology*. This may have been the first time that the term was presented to scientists in related fields in Japan. The contents of his report were related mainly to his impression of the annual meeting of the Aerobiology International Working Group, held in July 1972. He pointed out the importance of turbulent effect in aerobiological researches. This shows his genius talent and keen insight. Although a systematic research as aerobiology is hardly seen in Japan between the past and present, many aerobiological researches have been individually done respectively in several research fields. In this report, I would like to introduce the outline of "Aerobiological research" in Japan. We know that during World War II the Japanese army was researching the diffusion of biological weapons (bacilli). The aerobiological researches had come to be done actively after World War II in our country. Aerobiological study in Japan, as in other countries, can be roughly divided into four fields of interest: 1) pollen, 2) spore, 3) insect, and 4) etc.

1. Pollen

There are two main streams of aerobiological research on pollen in Japan. One is research on pollens as agents of pollinosis. The other is research on the isolation distances required to prevent hybridization mating in crop breeding. The former stream is the most active in Japan and has a history of

systematic research. The book of airborne pollen of the Japanese Islands that was edited by Nagano et al. in 1978 showed systematically the seasonal changes and the regional variation about various airborne pollens seen in Japan. Pollinosis caused by the pollen of Japanese cedar (*Cryptomeria japonica* D. Don) occurs in early spring. In recent years, the number of patients has increased rapidly, and the disease is becoming a serious social problem. Then, the core of aerobiological research in our country is in the phenology and dispersal research on cedar pollen. Studies of the relationship between the quantity of airborne cedar pollen and weather conditions can be divided into two types. The first type is investigations of the relationship between total numbers of airborne pollen and the previous year's weather (Saito and Usami 1980, Nemoto 1988, Takahashi et al. 1989, Kawashima 1990). The second type is investigations of the relationship between daily or hourly numbers of airborne pollen and various meteorological conditions (Saito and Usami 1980, Sahashi et al. 1983, Takahashi et al. 1989). Results common to these studies are related to variations in air temperature. Kawashima and Takahashi (1995, 1999) developed a simulation method for estimating the distribution of airborne pollen of Japanese cedar. Observations of the number of airborne pollen and the meteorological analyses have also been performed for the pollens other than the Japanese cedar in association with the allergy problem. The *Journal of Japanese Society of Allergology* and the *Journal of Palynological Society of Japan* are appropriate information sources in this field.

Pollen dispersal in relation to crop breeding has also been studied for a long time in our country, and a number of crops have been examined. The research on natural hybridization of the lotus (Suetsugu et al. 1960) and the research on pollen dispersal in grain sorghum (Hoshino et al. 1980) are examples. The *Japanese Journal of Breeding* is a useful source of information in this field of study. Recently, pollen

aerobiology has been studied in association with the environmental impact assessment of genetically modified crops, and a new research project in this area have been arranged by the Ministry of Agriculture, Forestry and Fisheries. The research on the pollen dispersal for corn and rice plant was investigated. For instance, the pollen dispersal for environmental assessment of genetically modified corn (Kawashima et al. 2000), the weather effect on hybridization of corn (Kawashima et al. 2002) are examples of recent aerobiological research. The *Journal of Palynological Society of Japan* is an appropriate information source in this field.

2. Spore

Most of the aerobiological research on spore in Japan is spore diffusion study related with the crops pathology problem. Though the spore of fungus is researched in association with an allergic problem as well as pollen, the number of reports is very few. A typical subject of crop pathology studies in our country is the spore of the rice blast fungus. In this spore, in general, the short range diffusion becomes a problem. However, if medium-range diffusion is not considered, then a number of phenomena cannot be explained. It was shown based on the phenomenon that the diffusion distance of the spore was about 1 km or more (Takeda 1992, Ishiguro 1994). In the rice blast, the spore is formed, secedes, and diffuses at nighttime (Suzuki 1969). The condition with rainfall without wind is the best for the infection of the rice blast (Kobayashi 1984). However, there is contradiction that diffusion doesn't happen easily because of the wash out if there is a rainfall (Suzuki 1969). Studies on *Xanthomonas campestris* pv. *citri* (Koizumi et al. 1996) and on *Puccinia polysora* (Nishi 1997) are examples of typical aerobiological researches on spores other than the rice blast. The research on the forecasting system for the crops disease by calculating the diffusion of the spore using the weather prediction

data is excellent work in our country. The *Japanese Journal of Phytopathology* is a useful source of information in this field.

3. Insect

The main current of the aerobiological research on a small insect in Japan is related to the crops harmful insect such as rice plant leafhoppers. Most research discussed the relations between size of harmful insect area and meteorological conditions (e.g. Hirai 1990). On the other hand, there is a research that examines the movement of rice insects in large area by using more global data. The project like "Clarification of rice insect's movement in the east Asia monsoon region" was performed as a joint research of Japan and China. In the rice insect movement belt of east Asia, seasonal variations and cyclogenesis of the Baiu front have become indices that show a geographic movement of the rice insects

(Sogawa and Watanabe 1992). The rice insects dashed out from the northern part of Vietnam fly to our country by the two steps long-range transportation process by way of southern China (Sogawa 1995).

A new method of observing airborne insect migrations by echoes from weather radar has also been investigated (Matsumura and Kusunoki 1998). The tethered balloon was floated in atmosphere to which non-precipitation echo appeared, and floating substances were collected with an insect net. As a result, a lot of airborne insects and spiders, etc. were collected. This work proved the effectiveness of the radar technology in the aerobiological study. The *Japanese Journal of Applied Entomology and Zoology* is a useful resource in this field of study. The research on the flight characteristic of insect's wing and the research on the flight of the plant seeds have been done besides above mentioned works.

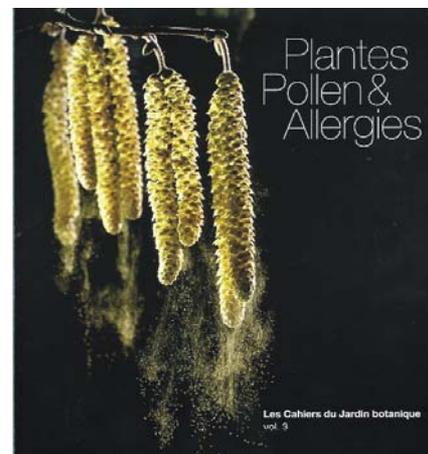
As mentioned above, a number of aerobiological researches have been done in various research fields in Japan. However, we had not met together to discuss the aerobiological results. Several years ago we planned a symposium entitled "Diffusion Problems and Aerobiology" and held it in Tsukuba. We had an active discussion, and shared the opportunity to enlighten mutually. We can expect that, in future, pollen allergy problems will become more serious and the environmental assessment of genetically modified plants will become more important. Similarly, problems with plant diseases and harmful insects will increase in response to global environmental changes such as global warming. I hope that aerobiology will be discussed more actively in Japan, and we would like to contribute to the development of aerobiology as a science in my own country and throughout the world.

New Book

Plantes, pollen et allergies François Felber, Bernard Clot, Annette Leimgruber-Bosset, François Spertini (Eds) 208 pp. color illustrated (In French)

Knowledge in botany, aerobiology and medicine are necessary for the understanding of plant allergies, but is rarely presented together. The present book includes these three disciplines: presentation of the main groups of plants and their reproduction, pollen dispersal and aerobiology, mechanisms and treatment of allergies. The influence of the life-style is not forgotten. The atlas presents 30 groups of common plants and their importance in airborne and oral allergies. This easily understandable book is written by specialists in their discipline and illustrated by numerous colored photographs and diagrams. It allows a good understanding of plant allergies in a botanical context and brings valuable information concerning their treatment. The diversity and complementarity of the topics makes this book useful to people with allergies, students and specialists as well.

1. Introduction
2. Les plantes : classification et biologie de la reproduction. François Felber
3. Dispersion du pollen et des graines, distribution des plantes. François Felber et Bernard Clot
4. Aérobiologie. Bernard Clot
5. Substances végétales toxiques et allergisantes. Christian Giroud
6. Mécanisme de l'allergie. Alain Sauty
7. Les manifestations cliniques de l'allergie pollinique et leur traitement. Annette Leimgruber-Bosset
8. Allergies : moyens de prévention. Alain Mantegani
9. Pollen aliments. Louis-François Debétaz.
10. Allergie de contact par les plantes. Nathalie Schaub et Andreas Bircher
11. Augmentation de la fréquence des allergies : un problème de société ? François Spertini
12. Atlas. Bernard Clot, François Felber, Annette Leimgruber-Bosset, François Spertini ; photos : Konrad Lauber (plantes), Gérard Sulmont (pollen)
13. Glossaire



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The International Association for Aerobiology

Membership Application

Membership in IAA is for the calendar year.

Dues are as follows:

- For individual members 20 US\$ per year
- for members belonging to associated societies or organizations 18 US\$ per year.
- For associated societies organizations 1 US\$ per year for each of their full members.

Send this form, duly filled in, to

Dr. Christine Rogers e-mail: crogers@hsps.harvard.edu
Environmental Science & Engineering - Harvard School of Public Health
Landmark Center, PO Box 15677, 401 Park Dr.
Boston, MA 02215 USA

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DOCTORAL THESIS

Ph.D. Thesis on atmospheric pollen in Caxias do Sul (Rio Grande do Sul, Brasil)

On January the 30th 2004, at the University of León, in Spain, PhD Sandra Maria Vergamini Duso defended her Doctoral Thesis, entitled “**Estudo Polínico da Atmosfera de Caxias do Sul (Rio Grande do Sul, Brasil)**”, under supervision of Dra. Rosa Maria Valencia Barrera and Dra. Carmem Pérez Morales (University of León).

This doctoral thesis presents an aerobiological study of the pollens present in the atmosphere of the city of Caxias do Sul, located in Southern Brazil (29° 14' S, 51° 10' W), in the State of Rio Grande do Sul. The seasonal and daily fluctuations of the different taxa, as well as the influence of the meteorological parameters of these has been analysed. A pollen calendar has been drawn for this city and the incidence of the different pollens can help the allergy doctors on the treatment of allergic people.

The aerobiological sampling was performed for two years (2001-2002), using a Hirst-type volumetric sampler (Burkard®) located at about 20 m above ground level, on the roof of the University Hospital in Caxias do Sul. The sampling followed the methodology proposed by the Spanish Aerobiological Network (REA).

In the atmosphere of Caxias do Sul, during the period of study, 40 pollen types were identified in a total amount of 30469 grains of pollen, being the taxa most representative, in order of abundance: Poaceae (5811); *Mimosa scabrella* (5743); Urticaceae (5620); Myrtaceae (3119); Cupressaceae (2347); *Rapanea* (1476); *Sorocea* (1190); Pinaceae (874); Asteraceae (674); *Ricinus* (642); Cyperaceae (630); *Araucaria* (569); *Plantago* (200); Melastomataceae (168); *Amaranthus* (139); *Rumex* (138); *Ligustrum* (130) and *Carya* (127). The greatest concentrations were registered on August (winter), because of the flowering of tree taxa *Mimosa scabrella*, Cupressaceae and Pinaceae, and on October (spring), because of the flowering of tree and shrub taxa Myrtaceae, Urticaceae, *Ricinus* and Asteraceae, and herbaceous taxa Poaceae, Cyperaceae, *Rumex* and *Plantago*.

During the period of study, 76.76% of the total amount collected were from the tree and shrub taxa, and 23.24% were from the herbaceous taxa.

The correlation between pollen concentration and meteorological parameters indicates that temperature, wind and rainfall are the variables that most directly influence the atmospheric levels of pollen. The evaporation was used by the first

time in aerobiological studies to know its influence in pollen concentration. We point out that the pollen types *Mimosa scabrella*, *Rapanea*, *Sorocea*, Melastomataceae and *Carya* are reported for the first time in the aerobiological studies in Brazil. The occurrence of *Mimosa scabrella* is because of the devastation of *Araucaria* forest, and the occurrence of Melastomataceae is because of its use in urban gardening.

Dra. Sandra Maria Vergamini Duso was awarded full marks with honours.

European Ph.D. Thesis on daily forecast models and pollen incidence in allergic population

On December 2003, at Cordoba University in Spain, Dr. Juan Antonio Sánchez Mesa presented his European Doctoral Thesis, entitled “Forecast models of Poaceae pollen in the air based on neural network. Study of pollen incidence in the allergic population” prepared under the direction of Dr. Carmen Galán Soldevilla and Dr. César Hervás Martínez (University of Cordoba). The thesis was divided into two parts. In the first part, the study of the variables that condition the main characteristics of the pollen season in the case of the Poaceae family has been considered. The previous classification of the years allowed us to improve daily forecast models. Prediction models were established in the case of Poaceae family by using both linear regression and neural network. In the second part, the main factors that influence the appearance of symptoms in allergic patients within the city have been analysed. To do this, clinical records of hay-fever patients and symptom surveys to the allergic population have been used. Besides, we used pharmaceutical data related to antihistamine units sold in the city. The thesis was successfully revised by two European referees, Dr. Jean Emberlin (University of Worcester, UK), and Dr. Rui Brandao (University of Évora, Portugal), and also it was fully deserved the unanimous prize of the board, under its President Dr. Eugenio Domínguez Vilches (University of Cordoba) and made up by José Luis Cruz Soto and Francisco Guerra Pasadas (University of Cordoba), Dr. M^a Mar Trigo Pérez (University of Málaga, Spain) and Dr. Paolo Mandrioli (ISAC CNR, Italy). Dr. Juan Antonio Sánchez Mesa was awarded full marks with honours.

Carmen Galán Soldevilla

28th IUBS General Assembly

Dear IAA members, Last January, from the 18th to 23rd, 2004, the 28th International Union Biological Sciences (IUBS) General Assembly and the International Conference on Biological Sciences, Development and Society, was held in El Cairo, Egypt. The International Association for Aerobiology was invited to attend the General Assembly and the Conference, as an IUBS affiliated Scientific Member. The Conference was organised by the IUBS on the occasion of its General Assembly, and co-sponsored by the Egyptian Academy of Scientific Research and Technology (ASRT), the International Council for Science (ICSU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). A written report of IAA activities during the period 2000 to 2003 was requested and Christine Rogers, as IAA Secretary General, sent on time. According to the IUBS statutes, the activities during this period were presented and discussed in the General Assembly. In addition, a new plan of action and the election of new Officers and Members of Executive Committee for the next triennium, 2004-2006 took place. I have taken part in this General Assembly as delegate for IAA and IAA has participated in the ballot with a vote. The new IUBS President is Motonori Hoshi from Japan, the Vice-President is Bráulio F. de Souza Dias from Brasil, the Secretary General is Christoph Scheidegger from Switzerland and the treasurer is Erwin Beck from Germany. Twelve other members from different parts of the world take part in the Executive Committee. The Conference on Biological Sciences, Development and Society was focussed on integrative biology approaches to promote sustainable development in developing countries. The priority areas of the conference were: sustainable terrestrial resources of arid environments; sustainable aquatic resources; bio-informatics and sustainable development; modern biotechnology; and society and integrative biology and complexity. A new session in the IUBS programme about Health and Well being was also included. Attending the Conference was very interesting because of the multi-disciplinary topics and the high number of representatives from many countries. We hope that our representation during these activities will open possibilities to establish new contacts for IAA purposes and forge stronger collaboration with IUBS for the future.

Carmen Galán

Young Aerobiologist Award

The International Aerobiology Association is pleased to announce a new annual award aimed at supporting studies in Aerobiology. The *Young Aerobiologist Award* will be awarded annually to a student or young researcher (under 35 years old) to support activities within the framework of the aims of the IAA. These include such activities as fieldwork, travel costs for visiting other laboratories, support for attending appropriate courses or travel to conferences. One award of \$US 1000 will be granted each year.

Eligibility

Applications are invited from persons studying any aspect of aerobiology and who has been an individual member of the IAA for at least 2 years.

Basis of the Award

The application will be evaluated using the following criteria: the qualifications of the student, the importance of the proposed project and its likely contribution to the science of Aerobiology.

Application

Application forms (one for the applicant and one for the applicant's supervisor) will be available from the IAA web page.

Applications should be made in writing to and include:

(i) A short CV outlining the applicant's qualifications and current course of study or employment.

(ii) A description of what the award would be used for.

(iii) A brief description of how the award would benefit the applicant's career and their contribution to aerobiology.

(iv) A supporting statement signed by the applicant's supervisor or employer.

The application (no more than 2 pages A4 or equivalent) should be sent by the applicant, together with a statement of support from their supervisor, to the Secretary of the International Aerobiology Association:

Dr. Christine Rogers - IAA Secretary

Dept. of Environmental Health - Environmental Science and Engineering

Harvard School of Public Health - Landmark Center

PO Box 15677

401 Park Drive - Boston MA 02215

Deadline

Applications should be received not later than February 1 each year.

The applications will be evaluated within 30 days of the expiry of the deadline and applicants will be informed of the panel's decision as soon as possible.

Application form is available at IAA's website:

<http://www.isac.cnr.it/aerobio/iaa>

FORTHCOMING EVENTS

XI International Palynological Congress Granada (Spain). 4-9 July 2004



For more information, please visit the website at:
<http://www.11ipc.org>

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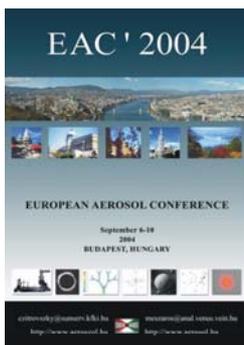
Spanish Palynological Association (APLE)
International Federation of Palynological Societies (IFPS)
University of Granada - Estación Experimental del Zaidín (CSIC)

12th International Congress of Immunology Montréal - CANADA, 18-23 July, 2004

On behalf of the International Union of Immunological Societies (IUIS), the 12th International Congress of Immunology, will be held in Montréal, Canada.

For more information, please visit the conference website:
<http://www.immuno2004.org>

European Aerosols Conference Budapest - Hungary - 6-10 September, 2004



The conference will be held in the beautiful historical building of the Hungarian Academy of Sciences (www.mta.hu), part of the World Heritage Foundation.

For more information, please visit the conference website:
<http://www.aeroszol.hu/conferencelink.html>

7th European Pollen Symposium Bad Lippspringe, Germany, 11-13 March, 2005



The German Pollen Information Service Foundation would like to invite you to the next Symposium in 2005. It will take place in Bad Lippspringe in the Park-Hotel.

The main topics will be:

1. Epidemiology of pollinosis and pollen counts
2. Oral allergy syndrome (pollen-fruit syndrome)
3. Prevention, therapy and rehabilitation of pollen-induced diseases
4. Specific immunotherapy in pollinosis
5. Hot pollen-related topics

The lectures will be in English (and some in German).

For more information, please visit the conference website:
http://www.pollenstiftung.de/literatur_symposium_7.html

10th Nordic Symposium on Aerobiology, Turku, Finland, 19-20 August, 2004



Organised by the Nordic Aerobiology Association (NAF)

For more information, please visit the conference website at:
[Http://www.sci.utu.fi/aerobiologia/xnaf](http://www.sci.utu.fi/aerobiologia/xnaf) or contact Symposium Secretary xnaf@utu.fi

European Course in Palynology RNSA - LYON - France, July 2005

RNSA is glad to inform you about the first French European Basic Course in Palynology which will be held in Lyon from the 17th of July 2005 to the 30th of July 2005

During the first week, you will attend:

- different lectures on Aerobiology, pollen structure and morphology, fungal spores, pollen development, plant identification and taxonomy, meteorological aspects of particles dispersal, allergy and pollinosis presented by IAA's European members.
- Basic microscopy, use of pollen traps, first step to pollen identification, preparation of drums, slides, scanning and counting of slides, data presentation

And on the second week, you will work on the identification of pollen grains :

- Porate pollen grains
- Tricolpate pollen grains
- Vesicular pollen grains and others pollen types
- There will be an exam on the last day.

This Course will be held at the "Centre de Formation ERASME" in Saint Clément Les Places (Rhône) near RNSA and LYON.

Some of our analysts will be on place to help you.

We will try to accommodate you at a very low fee at about 800 Euros maxi for the two weeks accommodation included (600 Euros for one week).

Please inform us as soon as possible of your intention to come in France because we must limit the number of participants at 25-28.

Thank's for your attention.

Welcome to France in July 2005.

Michel THIBAUDON and staff of RNSA

Secrétariat RNSA

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Te: 04 74 26 19 48 - Fax: 04 74 26 16 33

Email: msa@msa.asso.fr - Web : www.msa.asso.fr

8th International Congress on Aerobiology Neuchâtel, Switzerland, 21-25 August, 2006

Program:

Pre-congress Aa2006 Advanced Aerobiology course and cap-stone field course of the International Aerobiology Program in the Alps. August 15-19, 2006

"Aerobiology in Alpine Environment"

8th International Congress on Aerobiology in Neuchâtel. August 21-25, 2006

"Aerobiology: towards a comprehensive vision"

Satellite symposia in collaboration with other scientific societies.

Post-congress botanical and geomorphological tour in the Alps. August 27-31, 2006

"In Tyndall's footsteps"

For more information, please contact to Bernard Clot

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Airborne Allergen Identification courses

Would you like to learn how to sample for pollen and mold? Do you need to update your skills in this area? Let us help you! Multidata/Sampling Technologies, the manufacturer of the Rotorod Sampler, offers Airborne Allergen Identification courses twice a year. In our courses, we describe the sampling process from start to finish, including: use of sampling equipment in the environment, sample preparation and pollen and mold identification. We also include information on Indoor Air Quality: what to look for indoors and the medical effects. If you would like more information on our courses, please contact Nicole Tierney at 800-264-1338 x108. We look forward to hearing from you!

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