AIS LIFE Newsletter 3

http://ais-life.eu @aislife_2014 Ais Life

Contents

Message from the Coordinator

The objective of AIS LIFE Project is to demonstrate that information, developed for policy on environment and health, can lead to improvement in the management of pollen-related allergic respiratory diseases. Moreover another objective is to demonstrate that information can be developed to obtain better quality of life and management of pollen-related allergy in patient. The expected achievements are the production of 2 Aerobiological Information Systems (AIS): an Integrated Information System (IIS) and an enhanced Personalised Pollen Information System (PPI). AIS are expected to create benefits for residents, people working in/commuting to the study areas and visitors/tourists and to raise awareness among target groups about potential health effects of environmental pollution and preventive measures. Through the AIS allergologists can know concentrations of allergens/air pollutants in advance and adjust medicinal therapies, thus reducing side effects and costs.

The project provides two case studies in Italy and France. The first one produces risk maps through data on land use, pollen count agro-climatic indices, identifying areas with high risks for allergy sufferers in certain periods. The second case provides recommendations for plant (particularly ragweed) occupation of public green areas (Paris/Lyon).

Project actions in AIS

The project consists of 8 scientific-technical actions:

A. Preparatory actions

A1 Set up of an Integrated Information System (IIS) in 3 countries (France, Italy, Austria)

A2 Set up of an enhanced Personalised Pollen Information system (PPI) in France and Italy, in combination with an in depth QOL survey

B. Implementation actions

B1 Implementation of IIS and PPI in three countries (enrolment, randomisation, educational intervention)

B2 Health assessment of Allergy Patients

B3 Case Study Italy: Mapping of urban and rural environments through land use and allergic plants data, agroclimatic indices

B4 Case Study France: Analysis of plant occupation of public green spaces

C. Monitoring of the impact of the project actions

C1 Monitoring of the long-term implementation of Aerobiological Information Systems

C2 Validation and comparison of the effectiveness of the two Aerobiological Information Systems

Along with these scientific-technical actions, these following actions are and will be implemented:

D. Communication and dissemination actions

D1 Setting of procedures for reporting results and dissemination

D2 Creation and continuous updating of web page for project activities

D3 Stakeholder Involvement Activities

D4 Target Audience / General Public Awareness Raising

E. Project management and monitoring of the project progress

E1 Overall project operation

E2 Networking with other projects

E3 After-LIFE Communication Plan

E4 External Audit

Why monitoring pollen?

By Michel Thibaudon, Lyon (France)

Pollen monitoring is very important to know the real exposure to pollen.
The method used in AIS Life is the same than in all the European countries using Hirst pollen traps Lanzoni. The methodology used follows the new TS of CEN (CEN/TS 16868).
This European Standard specifies the procedure to continuously sample and analyse the concentration of airborne pollen grains and fungal spores in ambient air using the volumetric Hirst type sampler.
This European Standard describes both the sampling and the analysis procedures for the purpose of allergy networks.

The knowledge of pollen exposure permits:

- to help physicians in diagnosing allergic rhinitis, counjunctivitis, asthma,
- to prevent exacerbation of symptoms by using more effective drugs
- to help the patients in the preventive measures.

In AIS Life, the different Hirst pollen traps are located in Paris, Lyon, Pisa and Vienna. The analyses are made by the local teams.

Why is pollen/symptoms forecast important ?

By Carmi Geller-Bernstein

Zabludowicz Center for Autoimmune Diseases, Sheba Medical Center, Tel-Aviv, Israel

Plants were on earth long time before animals and humans. When we humans arrived, they provided us with food, cloth, even huts. However, their pollen brought us suffering that was first hinted already by Hippocrates: "all diseases occur at all seasons of the year, but certain of them are more apt to occur and be exacerbated at certain seasons (1)

The important role of pollen in inducing allergic sensitization, as proved by biomarkers, was always well known to clinicians (2), so was the correlation between pollen load and the appearance of clinical symptoms (3)

But beyond the pollen itself as a" Green Pollution", other factors influence its effects on allergic asthma and rhinitis (hay fever) such as interaction with traffic related pollution (4) , climate change and thunderstorms (5) metereological conditions (6) , to name but a very few examples.

Last but not least, it is to which specific pollen the patient is sensitized, that influences seasonal variations in asthma attacks (7)

In the last decades pollen counts and forecasts were used to present to the general public the most accurate information on what to expect pollen wise for the next day – whether to go out or stay indoors if we have pollen asthma (8).

There is no doubt that presence and severity of respiratory allergies – the most worrying of them, asthma - are associated with sensitization/allergy to pollen (9,10,11), when pollen represent an "allergenic risk "(12). Indeed, hundreds of species of plants release their pollen into the air every year but only a relatively small number of plants are responsible for most of the itching, sneezing, and watery eyes associated with hay fever and asthma.

There is also the concept of pollen "threshold "(the minimum level of an effector that activates a process under defined and specific conditions) that depends on several factors: mainly the density of plants in the region as described already fifteen years ago by Florido". Local conditions with a wide area dedicated to olive tree cultivars result in a high concentration of this pollen in the atmosphere. Monosensitized *Olea* patients in Israel seem to need exceptionally high levels to suffer from allergic symptoms" (13). All the above mentioned environmental factors together with genetic, epigenetic and transgene influences make it difficult to provide an accurate pollen/symptom forecast that would fit all hay fever sufferers in the world.

Why is pollen/symptoms forecast important ?

By Carmi Geller-Bernstein

Zabludowicz Center for Autoimmune Diseases, Sheba Medical Center, Tel-Aviv, Israel

Therefore a new concept emerged: the "personalized forecasting for pollen induced allergic rhinitis sufferers "applicable to asthma as well; this forecast is a model realized by combining daily hay-fever symptoms records made by the patients and daily pollen concentration levels provided by the European Allergy Network, in order to give the respective patients the most possibly accurate pollen/symptom forecast for the coming days (14)

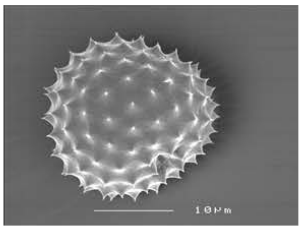
Such a forecast would illustrate best the importance of pollen and serve at best the whole community of pollen allergy sufferers; it would also offer allergy specialists an open way to good medical practice for respiratory allergic patients. The problem with it is however that on both ends (patient's and pollen data) high quality of information has to be provided and therefore not sure it's applicable everywhere in the world.

In our days, both aerobiology and allergy (diagnosis and treatments) reached highest degrees of sophistication on molecular levels. However, the link between these two disciplines is still not top priority on the agenda of the international scientific community. As reported in the book of allergy updated in 2013: " The role of changes in pollen and spore exposure on the development of atopy and asthma in future scenarios deserves more attention in national and international guidelines for the diagnosis and management of respiratory allergic diseases" Hopefully , in the next future this important subject will get all the attention it deserves.

Up the hill of making pollen science multidisciplinary, a community of pollen experts is organizing a symposium in Vienna , October 26-27, 2017 to debate the subject :

From fossil palynology to modern aerobiology and building the bridge with pollen allergy science.

Most common pollens and related plants



ambrosia

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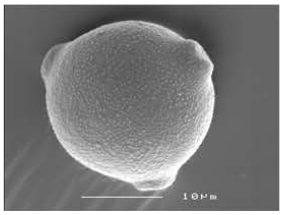

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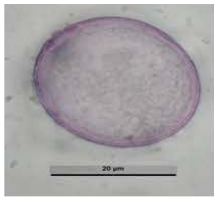
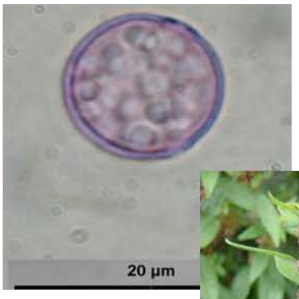


poaceae



urticaceae

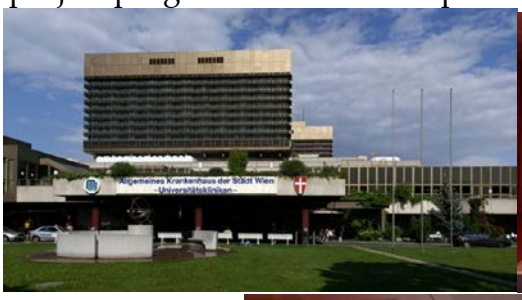
(Italy: in Pisa)

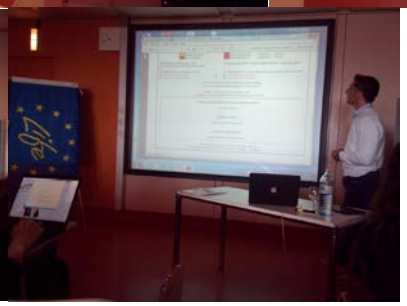
AIS LIFE Meetings

Past meetings

The Annual Meeting "AIS LIFE _ Aerobiological Information Systems and allergic respiratory disease management", 19 - 20th of June 2015, General Hospital of Vienna, Room 10, floor 7, WähringerGürtel 18-20, 1090, Vienna, Austria

The Annual AIS meeting 2015 was held at the General Hospital in Vienna, center of the Austrian pollen information service, 19 - 20th of June 2015. Participants where welcomed by Uwe E. Berger MBA, Head of Aerobiological Researcher Group, at the Medical University of Vienna, Austria, the scientific coordinator Prof. Simone Orlandini and project coordinator Francesca Natali from the Department of Agrifood Production and Environmental Sciences, University of Florence, Italy.
At the beginning of the meeting, the project leaders informed participants about the progress of each actions of the project. After that, attention was given to administrative items by the Administrative staff of UNIFI. All beneficiaries presented their own actions and informed partners about future steps in the project realization. The Annual project Meeting in Vienna has finished with discussion about project progress and future steps.





Upcoming meetings

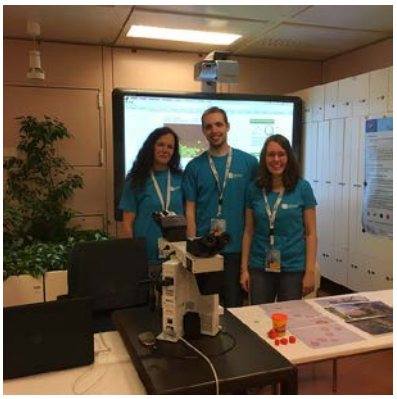
AIS LIFE Annual Meeting, **18-19/01/2017** in **Paris**, France

Presentations at International Meetings, workshops and Dissemination

17th of March 2016: Press conference of the Austrian pollen information service, Austria

Press conference given by the Austrian Pollen Monitoring Service at the Medical University Vienna in association with IGAV (Special interest group for allergen prevention), a forecast of this year's pollen season was presented, explained how an allergy can be diagnosed and treated with the focus on scientific approach to this field. In order to represent scientific activities, the Austrian Pollen Monitoring Service has informed public about activities conducted in the AIS LIFE project. Main objectives of the project have been presented, also partners and activities were described.

Names of presenters: Uwe E. Berger MBA, the Pollen Warning Service, Medical University Vienna /Mag. Dr. Katharina Bastl, the Austrian Pollen Warning Service, Medical University Vienna /Univ.-Prof. Dr. Erika Jensen-Jarolim, the Floridsdorf Allergy Centre, Vienna /Univ.-Prof. Dr. Reinhart Jarisch, the Floridsdorf Allergy Centre, Vienna



April 2016: Long Night of Research (in German: Lange Nacht der Forschung), Austria

The Long Night of Research is an initiative to increase awareness of research and development in Austria. We used this opportunity to represent the AIS LIFE project and to enroll people in our study.

27th of May 2016: LIFE DAY by University of Florence, Florence, Italy

Presentations at International Meetings, workshops and Dissemination

11-15 June 2016: **Dissemination and promotion of AIS LIFE project at EAACI 2016, Vienna, Austria**

14th of June 2016: **Seminar on pollen allergy, Rome, Italy**

25th of June 2016: **Seminar on pollen allergy, Garfagnana, Italy**

18-22 July 2016: 6th European symposium on aerobiology, Lyon, France

This Symposium was organized by the European Aerobiology Society (EAS) in partnership with the RNSA and AFEDA, and the logistics of Alphavisa (Montpellier). It was held at the University of Lyon 2, on campus "Berges du Rhone" in the city of Lyon, with over 160 participants from 35 different countries. The main French teams were from the universities of Clermont-Ferrand, Lille, Lyon and Strasbourg. RNSA presented : "Case Study France : Analysis of plant occupation of public green spaces."

The program, which included 100 oral presentations and 76 pre-posters, is available, as well as all of the abstracts, in the link: www.pollens.fr/docs/ESA2016.pdf

All presentations are downloadable in pdf format on the conference website: www.alphavisa.com/esa/2016/

You can already have access to a selection of photos: www.alphavisa.com/esa/2016/photos.php

A common first lecture between the European Federation of Allergy and Air-ways Diseases Patients Association and the European Aerobiology Society (Roberta Savli and Michel Thibaudon) has from the start of the conference, stressed the importance of implementing national regulations and European regulations for the measurement of biological particles from the air and patient information:

www.efanet.org/images/2016/ESA_2016_LECTURE_1_-_Is_pollen_a_pollutant_Thibaudon-Savli.pdf

www.efanet.org/index.php?option=com_content&view=article&id=3054&catid=41&Itemid=119

In this regard, work on the World Atlas of aerobiological measures highlighted the excellent level of European networks. Two presentations confirmed that the weather of June and July were guiding pollination birch next year. The most original presentations concerned the different methods of modeling of pollen in the air and in real time methods that will be the future of aerobiology, complementing the traditional method Hirst. The Plair PA-300, and KH 200 FIDAS 3000 remain the most promising current equipment. Only Plair allows discrimination of different pollens in real time. The image analysis methods (BAA500) does not reveal powerful and low cost pollen traps provide to date no acceptable result. Note different worth presentations using molecular biology methods such qPCR (quantitative PCR) for Determiner certain species, especially among the Cupressaceae.Some papers have focused on the interests of phenological observations to supplement the information provided by the pollen traps, provided to observe trees and natural plants located in the ground for many years and undergoing no watering type of treatment, etc.

Several presentations at the session allergy introduced by Professor Frédéric De Blay, have confirmed the value of using national versions of PHD (Patient's Diary Hayfever) and different applications to record symptoms. Similarly, the work using data from drug consumption, egOpenhealth® data, confirmed that there was a good information about the health effects linked to exposure to pollen.

Ambrosia a specific session, organized in conjunction with the International Ragweed Society (IRS) and the COST SMARTER, brought together all stakeholders concerned by this invasive plant, both agriculturally as biologically or health plan.

A more detailed account scientific congress will be published in an upcoming issue of the journal Atmospheric Pollution.cf: http://lodel.irevues.inist.fr/pollution-atmospherique/

7-8 July 2016: Conferenza Tecnologie e innovazione per una gestione sostenibile dell'agricoltura, dell'ambiente e della biodiversità (Ti4AAB), Museo di Storia Naturale presso la Certosa di Calci (PI) - Università di Pisa, Italy

Presentation of **Sandra Baldacci, Sara Maio,** UdR di Epidemiologia Ambientale Polmonare, Istituto di Fisiologia Clinica CNR, Pisa: "**AIS: Sistemi Informativi Aerobiologici per la gestione delle allergie da polline.**"

15 – 16th October 2016: The Annual Meeting of the Austrian aerobiology group, Nationalpark Neusiedler See, Illmitz, Austria

The Annual Meeting of the Austrian aerobiology group 2016 was held in the National park Neusiedler See in Illmitz, 15 - 16th of October 2016. Participants where welcomed by Uwe E. Berger MBA, Head of Aerobiological Researcher Group and Katharina Bastl, university assistant at the Medical University of Vienna, Austria. At the meeting the current activities and future developments of the Aerobiological information system in Austria was discussed. Also talks of colleagues from Germany, Italy, Switzerland and Israel where presented. In addition the progress and future steps of the AIS LIFE project have been shown and discussed.

Press releases and Publications

- Buters J, Prank M, Sofiev M, Pusch G, Albertini R, Annesi-Maesano I, Antunes C, Behrendt H, Berger U, Brandao R, Celenk S, Galan C, Grewling Ł, Jackowiak B, Kennedy R, Rantio-Lehtimäki A, Reese G, Sauliene I, Smith M, Thibaudon M, Weber B, Cecchi L. Variation of the group 5 grass pollen allergen content of airborne pollen in relation to geographic location and time in season. J Allergy Clin Immunol. 2015 Jul;136(1):87-95.e6. doi: 10.1016/j.jaci.2015.01.049.
- Ruggiero F., Orlandini S., Natali F., Cecchi L., Baldacci S., Maio S., Sarno G., Cerrai S., Silvi P., Berger U., Prentovic M., Annesi Maesano I., Moustafa A., Thibaudon M., Monnier S, Oliver G., Bedini G. "Aerobiological Information System and allergic respiratory disease management - LIFE13ENV/IT/001107", 2015, In AA.VV., 110° Congresso della Società Botanica, libro: Abstract, pp. 154, Società Botanica Italiana Firenze, ISBN 978-88-85915-16-9
- Ruggiero F., Bedini G. (2016) First year of aerobiological monitoring in Pisa (Italy) for the most allergenic plant families - fungal spores and their allergenic potential – AIS LIFE - LIFE13ENV/IT/001107, In Book of Abstract of the 6th European Symposium on Aerobiology of the European Aerobiology Society, Lyon 18 - 22 July, pp. 252-253
- Bedini G., Ruggiero F. (2016) First aerobiological monitoring data in Pisa (Italy) within AIS-LIFE Project. In Book of Abstract of the 111° ConvegnodellaSocietàBotanicaItalianaOnlus, Roma 21 - 23 September, pag. 143
- "Carnet des plantes du Jardin botanique de la Ville de Lyo, numéro 7 – 2015, Sauvages & Cultivées - Page 7", http://www.jardin-botanique-lyon.com/static/jbot/contenu/jardin_botanique/coulisses_du_jardin/sauvages-et-cultivees/Sauvages%20et%20cultivees%202015.pdf

AIS Partners

Universityof Florence-Department of Agrifood Production andEnvironmental Sciences, Florence - Italy(UNIFI)

CNRInstituteof Clinical Physiology,Pisa, Italy (IFC-CNR)

Universityof Pisa -Department of Biology,Pisa, Italy(UNIPI)

MedizinischeUniversitaet, Wien,Vienna, Austria, (MUW)

Réseau NationaldeSurveillance Aérobiologique Lyon, France(RNSA)

Université Pierreet MarieCurie, Paris, France (UPMC)

Institutnational de lasanté et de la recherchemédicale Paris, France (INSERM)

WHO is WHO ?

ISTITUTO DI FISIOLOGIA CLINICA
CONSIGLIO NAZIONALE DELLE RICERCHE

Sandra Baldacci

Biologist, Career researcher of IFC-CNR. She has special competence in designing, conducting and analyzing epidemiological surveys. In particular, she has been involved in realizing the two largest epidemiological longitudinal studies on Italian general population samples (Po Delta and Pisa prospective studies) for better understanding the natural history of COPD. Her main scientific fields are respiratory epidemiology and environmental epidemiology with particular expertise in developing protocols for the immuno-allergological characterization of general population samples.
Within AIS-LIFE project she is responsible of the IFC-CNR Pisa Unit involved in the actions:
- B1: Implementation of IIS and PPI in three countries (enrolment, randomisation, educational intervention)
- B2: Health assessment of Allergy Patients
- C2: Validation and comparison of the effectiveness of the two Aerobiological Information Systems
- D3: Stakeholder Involvement Activities
- D4: Target Audience / General Public Awareness Raising
- E1: Overall project operation.

Sara Maio

Environmental scientist, Epidemiologist, temporary researcher of IFC-CNR. She has collaborated with IFC-CNR since 2004, focusing on the health effects of air pollution exposure, bronchial hyper-reactivity, depression and mood diseases, natural history and risk factors of COPD. Her main scientific fields are respiratory epidemiology and environmental epidemiology with particular expertise in using GIS technology, to relate the health status of the subjects to the environmental characteristics.
Within AIS-LIFE project she is mainly involved in the following activities:
- preparation and implementation of the Aerobiological Information Systems
- preparation of questionnaires and diaries for data collection
- collaboration to the environmental monitoring activities
- execution of centralized statistical analysis
- dissemination of the obtained results.

Sonia Cerrai

Biologist, Fellow of IFC-CNR. She has collaborated with IFC-CNR since 2008, focusing on the health effects of air pollution exposure. Her main scientific fields are respiratory epidemiology and environmental epidemiology with particular expertise in health data collection through questionnaires and clinical tools.
Within AIS-LIFE project she is mainly involved in the following activities:
- preparation and implementation of the Aerobiological Information Systems
- preparation and implementation of the follow-up phase
- execution of centre-specific statistical analysis.

WHO is WHO ?

ISTITUTO DI FISIOLOGIA CLINICA
CONSIGLIO NAZIONALE DELLE RICERCHE

Giuseppe Sarno

Environmental scientist, Fellow of IFC-CNR. He has collaborated with IFC-CNR since 2008, focusing on the evaluation of environmental exposure. His main scientific fields are respiratory epidemiology and environmental epidemiology with particular expertise in using instruments for the measurement of indoor/outdoor air pollutants concentration.

Within AIS-LIFE project he is mainly involved in the following activities:

- preparation and implementation of the Aerobiological Information Systems
- preparation and implementation of the follow-up phase
- management of the environmental monitoring
- support to the coordination of activities at local level
- maintaining contacts with the other partners participating in the project.

Anna AntoniettaAngino

Technician of IFC-CNR. She has collaborated with IFC-CNR since 1990, focusing on data extraction, database management and statistical analyses.

Within AIS-LIFE project she is mainly involved in the following activities:

- preparation and implementation of the Aerobiological Information Systems
- quality control of database and statistical analysis
- quality control of the environmental monitoring data.

Patrizia Silvi

Technician of IFC-CNR. She has collaborated with IFC-CNR since 1989, focusing on supporting the general organisation of the scientific and logistic activities within several epidemiological studies.

Within AIS-LIFE project she is mainly involved in the following activities:

- collaboration to the preparation and translation of the tools for data collection during the field survey
- implementation of the Aerobiological Information Systems
- support to the administrative and logistic activities at local level.

Stefania La Grutta

Medical Doctor, Pediatric Allergist, Senior researcher of IBIM-CNR. She has been involved as Coordinator of Palermo Centre of the SIDRIA-2 national study and the SEARCH (School Environment And Respiratory Health in Children) international study, in 2002-2004 and 2008-2010 respectively. Her research activity focuses on the epidemiologic evaluation of the effects of indoor/outdoor environments on allergic respiratory diseases in children and in the evaluation of the functional, immunopathological mechanisms of asthma/rhinitis and allergic diseases.

Within AIS-LIFE project she is mainly involved in the following activities:

- pulmonary consultation
- medical recommendations for the Integrated Information System.

WHO is WHO ?

DIPARTIMENTO DI BIOLOGIA
UNIVERSITÀ DI PISA

Gianni Bedini

Gianni Bedini is a botanist serving at the Department of Biology, University of Pisa, Italy.

His main interests lie within plant conservation, seed germination, biodiversity distribution databases. He is also interested in the history, development and management of Botanic Gardens.

Franco Ruggiero

Biologist, Fellow of the Department of Biology at the University of Pisa. He has collaborated with the Department of Biology since 2014. He has unique background in the fields of aerobiology, environmental monitoring, such as aerobiological, chemical monitoring and in meteorology. Specifically, he has demonstrated strong expertise in analysis and handling large aerobiological, air pollutants, meteorological data; laboratory techniques in environmental monitoring and weather forecast models.

Furthermore, he is the creator and developer of the AirPOLL – IIS (Integrated Information System) in Pisa.

Within AIS-LIFE project he is mainly involved in the following activities of the UNIPI Unit:

- Set up of an Integrated Information System (IIS)
- Implementation of IIS and PPI
- Monitoring of the long-term implementation of Aerobiological Information Systems
- Stakeholder Involvement Activities
- Target Audience / General Public Awareness Raising