



**Aerobiology Instruction and Research, LLC**

# **Introductory Pollen Identification and Bioaerosol Samplers**

**A Two and a Half-Day Workshop**

Amherst, Massachusetts  
1-3 May 2017

Faculty:

Michael L. Muilenberg, M.S. (Director)  
Christine A. Rogers, Ph.D. (Co-Director)



**Organized by A.I.R.**



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#### Introduction

The ability to visually identify pollen grains is a highly specialized skill. It takes commitment and time in order to develop the competence to accurately identify the wide variety of airborne pollen types and differentiate them from other biological and non-biological particles. Our experience in managing pollen and spore certification programs has shown us that individuals gain greater competence in a shorter amount of time if they are given intensive instruction in both the biological aspects and hands-on technical skills required for pollen identification. We therefore offer this workshop which will be conducted over two and a half days to allow ample time to describe and demonstrate a variety of pollen types, as well as allow registrants to scan and identify pollen from air sample slides. There will be ample time to address any questions about pollen identification as well as sampling instruments.

A microscope will be provided to each participant for their use during the identification workshop. Participants are also encouraged to bring their own sample “unknowns” (air samples or field-collected pollen) for assistance with identification.

Note: This workshop counts as one of the hands-on workshops required by the National Allergy Bureau (NAB/AAAAI) for certification (see: <http://www.aaaai.org/global/nab-pollen-counts/counting-stations/become-a-counter.aspx>).

#### Workshop Description – Introductory Pollen Identification and Bioaerosol Samplers

This course is designed to help the “novice” pollen analyst learn necessary palynology fundamentals, including: microscopy, plant reproduction, pollen morphology, and learn to identify common pollen types. This workshop is geared toward beginners, but will also allow those who have counted for a few months to a year to expand their knowledge and improve their skills. Registrants will learn to identify characteristics of a variety of pollen types, all of which are commonly encountered in the air. In addition to identification, aerobiological aspects will also be discussed (concentrations, seasonality, etc.). The bioaerosol sampler portion of the workshop will concentrate on Hirst-type Sampler (Burkard traps), but Rotorod samplers will also be discussed. Topics covered will include: set up of the samplers, application of adhesives to impaction surfaces (Burkard slides, or drums), mounting the recoveries for microscopic analysis, counting particles and reporting data, as well as maintenance of the equipment. Instruction will be in the form of lecture, demonstration, and individual study of reference material and actual

air-sample slides. This intensive two and one half-day workshop will allow ample time for one-on-one instruction and questions.

Upon completion of the introductory workshop, participants will have the necessary skills to set up and operate different types of bioaerosol sampling equipment and be familiar with the advantages and disadvantages of each, prepare samples for analysis, accurately count and identify a variety of pollen types, and calculate airborne concentrations. These skills will be useful for those intending to analyze, monitor, or study indoor or outdoor airborne pollen concentrations.

Faculty: Dr. Rogers and Mr. Muilenberg are partners of Aerobiology Instruction and Research, LLC, and are also employed at the University of Massachusetts-Amherst.

**Michael L. Muilenberg, M.S. (Director).**

Mr. Muilenberg has extensive experience in the set-up, operation, evaluation, and theory of aerobiological sampling equipment. He is a partner in Aerobiology Instruction and Research, LLC (A.I.R.) and has broad knowledge of both pollen and fungal spore identification. He has taught identification workshops for the American Academy of Allergy Asthma and Immunology (AAAAI), the American College of Asthma Allergy and Immunology (ACAAI), McCrone Research Institute, Louisiana State University Health Center, among other organizations, for over 30 years. He was in charge of the quality control portion of the AAAAI Network for over 10 years, is currently Sec/Treas (and former President) of the Pan-American Aerobiology Association, and is on the Board of Directors of the Pan-American Certification Board, a program to certify spore and pollen analysts. He is a pre-evaluator for the American Industrial Hygiene Association EMPAT spore identification proficiency tests and is on the editorial board of the aerobiology journal, *Aerobiologia*.

**Christine A. Rogers Ph.D., CIH (co-director).** UMass Asst. Dir. Academic Safety and Environmental Health.

Dr. Rogers studied temporal and spatial aspects of airborne pollen and pollen forecasting for her doctorate at the University of Toronto and has been counting and identifying airborne particles since 1985. She is a partner in A.I.R. and has taught pollen identification at the AAAAI and ACAAI Aeroallergen Identification Workshops for several years. She joined the aerobiology group at Harvard School of Public Health in 1998 and took a leading role in the Aeroallergen Network quality control program. Chris is a Certified Industrial Hygienist and is currently Assistant Director, Academic Safety and Environmental Health at University of Massachusetts. She is Past-President of the International Association for Aerobiology and on the Board of Directors of the Pan-American Aerobiology Certification Board, and is Associate Editor of the journal, *Aerobiologia*.

When

The Workshop will begin at 9:00 a.m. on Monday, 1 May 2017 and adjourn at 12:30 p.m. on Wednesday, 3 May 2017. See the complete schedule below.

## Where

The Workshop will be held on the University of Massachusetts campus in the Lincoln Campus Center, 8<sup>th</sup> Floor (more information to follow). For information about the UMass Campus, visit the university website at [www.umass.edu](http://www.umass.edu). Click on “Visit Campus”, then “Campus Maps” to locate the Campus Center. If you stay at the Campus Center Hotel (see below), you can simply take the elevators to the 8<sup>th</sup> floor for the workshop venue (Rm. 803). There is a cafeteria on the 2<sup>nd</sup> floor of the Campus Center for lunch and dinner if you so desire.

## Travel

Note that the closest airport to Amherst is Bradley near Hartford, Connecticut; about 1 hour from the meeting venue. The Valley Transporter provides shuttle service between Bradley and Amherst (<[www.valleytransporter.com](http://www.valleytransporter.com)>, I think about \$45 each way). Many in the past have rented cars (parking is included in the room rate at the UMass Campus Inn). For those staying off-site parking is available at a small fee. Boston Logan airport is a 2 1/4 hour drive from Amherst.

## Registration

The registration fee is \$700 for the Introductory Pollen Identification and Bioaerosol Sampler Workshop. In addition to two and one half-days of instruction, registrants will receive a syllabus and a box of reference slides of known pollen types.

## Accommodations

Please make your own arrangements for accommodations. Rooms are available on the UMass campus at the Campus Center Hotel. Sleeping room rates are \$130/night (plus tax and fees) which includes continental breakfast, parking, and free high speed internet. For reservations, call 877 822-2110 (please mention Group Code: IPI17C); a block of rooms is being held until March 31<sup>st</sup>; if you would like to stay at the hotel, please make your reservation before that date. Other hotels are available in Amherst and Hadley within a few miles of the campus; contact the organizers if you would like help in selecting a hotel or bed & breakfast.

Note that UMass has a smoke-free policy; all public areas and individual work areas are designated non-smoking. Smoking is only allowed outside areas 20 ft. from the perimeter of any building.

For more information contact Mr. Muilenberg by phone 617 504-7215; or email: [aerobiology@yahoo.com](mailto:aerobiology@yahoo.com)

We look forward to hearing from you!

## Introductory Pollen Identification – Tentative Schedule

### Monday, 1 May 2017

9:00-9:15 Introductions, Overview  
9:15-10:30 Introduction to Pollen:  
biology, ecology. Pollen  
Identification: morphology  
10:30-10:45 Break  
10:45-12:00 Microscope use; Pollen  
apertures  
12:00-1:15 Lunch (on your own)  
1:15-3:45 Pollen Characteristics and  
the use of Dichotomous Keys  
3:45-4:30 Reference slides;  
Identification of common  
types.  
4:30-5:00 Counting methods,  
calculations from raw counts  
to particle concentration  
5:15 Happy Hour

### Wednesday, 3 May 2017

8:30-10:00 Microscopy and Pollen  
Morphology  
10:10-10:15 Break  
10:15-11:00 Pollen unknowns, air  
sample slides  
11:00-1:00 Questions and Quizzes  
1:00 Adjourn

### Tuesday, 2 May 2017

8:30-9:15 Principles of airborne  
particle collection, sampler  
types.  
9:15-10:30 Field trip, sampler  
demonstrations.  
10:30-10:45 Break  
10:45-12:00 Microscopy and Pollen  
Morphology  
12:00-1:15 Lunch (on your own)  
1:15-2:30 Microscopy and Pollen  
Morphology  
2:30-2:45 Break  
2:45-4:00 “Unknown” prepared slides  
4:00-5:00 Microscopy and Pollen  
Morphology  
6:00 Dinner

