Determining thresholds for *Ambrosia* using the Patient's Hay Fever Diary (PHD)

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PHD: User Data 2009 - 2011

User Data in short:

• Over all registered users: 17 800
• Number of datasets: 340 715 (09/2011)
• Over all registered users 5 days min: 7 000
• Countries involved: 9 (Austria, Germany, Switzerland, France, Sweden, Finland, Serbia, Slovenia, Turkey)
**Data Entry - February 23, 2012 (yesterday)**

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**Location**
- **Country**: Germany
- **Place**: 80992 München

**Eyes**
- **Problems**
  - None
  - Symptoms
  - Mild
  - Foreign body sensation
  - Moderate
  - Redness
  - Severe
  - Watering

**Nose**
- **Problems**
  - None
  - Symptoms
  - Mild
  - Foreign body sensation
  - Moderate
  - Running
  - Severe
  - Blocked

**Lungs**
- **Problems**
  - None
  - Symptoms
  - Mild
  - Foreign body sensation
  - Moderate
  - Shortness of Breath
  - Severe
  - Asthma

**Medicines**
- None
- Eye Drops
- Nose Drops (or Spray)
- Anti-Allergy Tablets
- Homeopathic Remedy
- Other

*Please mark the medicines you have taken, or “None” if no medicine was necessary.*

**Comments**

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**Missing Pollen Data?**
The air samples for your pollen data are analyzed using a microscope. Depending on the pollen counting station, data is available with a delay of at least 2-7 days.

**No More Symptoms?**
To allow for optimal statistical analysis, please enter at least 3 additional symptom-free days before and after your season.


![Graph showing visualisation data]

**Date** | **Location** | **Overall Symptom Score** | **Eyes** | **Nose** | **Lungs** |
--- | --- | --- | --- | --- | --- |
2012-02-21 | 80992 München | Moderate | Mild | Mild |
2012-01-27 | 1160 Wien | None | None | None |
2012-01-26 | 1160 Wien | None | Mild | None |
2012-01-25 | 1160 Wien | Moderate | Severe | Mild |
2011-04-19 | 1160 Wien | None | None | None |
2011-04-18 | 1160 Wien | Mild | Mild | Mild |
2011-04-17 | 1160 Wien | None | Moderate | Severe |
### PHD Statistical Analysis

**Calculation of Correlations for 65 Pollen/Spore Types**

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**Research Group Aerobiology and Pollen Information, Department of Oto-Rhino-Laryngology**
PHD: Gender Distribution

Distribution by Sex (N=14021)

- Unknown: N = 96
- Male: N = 6860
- Female: N = 7065

Frequency = number of users
PHD: Distribution by Age

Most users 20 - 50
Peak 30 - 35
PHD: Distribution by Aeroallergens

Distribution of Allergens

Frequency = number of pos. correlations

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PHD: Sensitization Types

Mono
1 x significant positive correlation

Oligo
1 x significant positive correlation PLUS one more IN THE SAME GROUP:

- Group A: Betu, Alnus, Alnv, Cory, Carp, Ostr, Quer, Fagu, Cast;
- Group B: Poac, Seca, Cere, Trit, Zeam, Aven, Phra, Hord;
- Group C: Olea, Oleo, Frax, Frao, Ligu, Syri, Fors;
- Group D: Aste, Arte, Ambr, etc...;
- Group E: Sali, Popu, Popt;
- Group F: Cann, Humu;
- Group G: Urti, Memb, Pari;
- Group H: Cupr, Juni, Thuj;
- Group I: Rosa, Rosh, Spir, Pote, Sorb

Poly
1 x significant positive correlation PLUS another one IN ANOTHER GROUP
PHD: Sensitization Types

Distribution by Sensitization Type (N=4478)

Frequency = number of pos. assignments

- MONO: N=1476
- OLIGO: N=322
- POLY: N=2680
Timeseries 2009 – 2010 Ambrosia + OST
(OST = Overall Symptoms Total)
Regionwise Comparison of Symptoms and Allergens – Timespan: 08–01 – 09–30

Overall Symptoms Total

\[ \sqrt{\text{pollen}} / \text{m}^3 \]

Region
- atr3: eastern part of Austria
- frrhonealp: France Rhone-Alpes
- frse: France Paris area
- yuvojvod: Serbia Vojvodina

Region:
- atr3: N = 1325
- frrhonealp: N = 246
- frse: N = 254
- yuvojvod: N = 291
Conclusions

- Correlations between symptom scores of allergic reacting patients and pollen counts

- The ratio between pollen load and reaction intensity varies in different biogeographical areas

- Areas with long lasting high exposure seem to induce some kind of tolerance in the regional human population

- Results indicate that thresholds can be calculated with the PHD (Patient’s Hayfever Diary) if a sufficient number of patients can be reached in each biogeographical region
COST ES0603

Threshold Definition Principles

- “To have symptoms” = sum of scores for nose, eyes, bronchi is > 20% of the total score
  - No risk (<5% of people in the region & using PHD with symptoms)
  - Low risk (5-25% of people living in the region with symptoms)
  - Moderate risk (25-50% of people living in the region with symptoms)
  - High risk (>50% of people living in the region with symptoms)
  - Very High risk (>75% of people living in the region with symptoms)

PASODOBLE - "Promote Air Quality Services integrating Observations - Development of Basic Localised Information for Europe"
Future of Pollen information

pollenwarndienst.at launched March 2012
Polleninfo.org will be launched at the end of April 2012
Future of Pollen information

- Version 1 commenced 14 March
- Personalised version (beta vers. 3) due to commence autumn 2012
- Location Based Pollen Information founded on data entries from PHD. The user is classified based on past 10 entries and receives a personalized forecast
Determining thresholds for *Ambrosia* using the Patient's Hay Fever Diary (PHD)

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\(^1\)Department of Oto-Rhino-Laryngology, Medical Faculty University of Vienna, Vienna, Austria;
\(^2\)RNSA Réseau National de Surveillance Aérobiologique France, Brussieu, France