



Working Group Interim Report

1	Title of Working Group	<i>Aspergillus terreus</i>
2	Name(s) of Coordinator(s)	Cornelia Lass-Flörl
3	Objectives	<ol style="list-style-type: none"> 1. Explore the genetic diversity and population dynamics of <i>A. terreus</i>. Under this aim, we propose to: <ol style="list-style-type: none"> a) develop a comprehensive culture repository comprising both clinical and environmental isolates of <i>A. terreus</i> and other isolates in section <i>Terrei</i>, b) design a multilocus sequence typing scheme (MLST) for species identification in Section <i>Terrei</i>, c) using the repository and the MLST scheme, generate data on the genetic diversity and population dynamics of <i>A. terreus</i>, d) establish a new typing method based on the polymorphism of tandem repeats in <i>A. terreus</i>, e) recognize and validly publish new species. 2. Understand the epidemiology of <i>A. terreus</i> by <ol style="list-style-type: none"> a) developing a microsatellite marker panel for strain discrimination and use test this panel on several environmental and clinical isolates of <i>A. terreus</i> to understand the molecular epidemiology of this organism b) elucidating the clinical epidemiology of <i>A. terreus</i> 3. Investigate amphotericin B resistance in <i>A. terreus</i>. 4. Study immune response and virulence potential of <i>A. terreus</i>. 5. To set up animal models to establish in vivo and in vitro correlation. 6. To study clinical infections. 7. To create an <i>A. terreus</i> proteome map. 8. Database A web-based data base will be built up and made accessible for all participants for studies. 9. Prepare a genomic bank for <i>A. terreus</i> which will be use for the identification and characterization of some putative virulence factors of the fungus (e.g. anti-oxidant systems, proteases, etc.). 10. Exo-metabolomics on <i>Aspergillus terreus</i> and related species.
4	Achievements of the Working Group in last year (250 words)	<ol style="list-style-type: none"> 1. Initiation of "TerrNet -A Global <i>Aspergillus terreus</i> Surveillance Study (An initiative of the ISHAM <i>Aspergillus terreus</i> working group and ECMM)" - still running. 2. Genetic diversity and population dynamics - paper in preparation (Lackner). 3. Investigating <i>A. terreus</i> resistance - paper in preparation (Blatzer)

		<p>and Jukic).</p> <p>4. Immune response and virulences - paper in preparation (Binder).</p> <p>Publications from our group regarding <i>Aspergillus terreus</i>: Lewis RE, Albert NP, Liao G, Wang W, Prince RA, Kontoyiannis DP (2013) High-dose induction liposomal amphotericin B followed by de-escalation is effective in experimental <i>Aspergillus terreus</i> pneumonia. J Antimicrob Chemother 68: 1148-1151. Genovese G, Leitner S, Minicante SA, Lass-Flörl C (2013) The Mediterranean red alga <i>Asparagopsis taxiformis</i> has antifungal activity against <i>Aspergillus</i> species. Mycoses 2013, doi: 10.1111/myc.12065. [ahead of publication]. Blum G, Hörtnagl C, Jukic E, Erbeznik T, Pümpel T, Dietrich H, Nagl M, Speth C, Rambach G, Lass-Flörl C (2013) New insights into Amphotericin B resistance in <i>Aspergillus terreus</i>. Antimicrob Agents Chemother 57: 1583-1588. Blum G, Kainzner B, Grif K, Dietrich H, Zelger B, Sonnweber T, Lass-Flörl C (2013) In vitro and in vivo role of heat shock protein 90 in Amphotericin B resistance of <i>Aspergillus terreus</i>. Clin Microbiol Infect 19: 50-55. Blum G, Kainzner B, Hörtnagl C, Nagl M, Speth C, Binder U, Maurer E, Sarg B, Lindner H, Gruber P, and Lass-Flörl C (2013) Heat shock protein 70, a cross-road for Amphotericin B resistance in <i>Aspergillus terreus</i>. Submitted for publication in The Journal of Infectious Diseases. Speth C, Blum G; Hagleitner M, Hörtnagl C, Pfaller K, Posch B, Ott H, Würzner R, Lass-Flörl C, Rambach G (2013) Virulence and thrombocyte affectation of two <i>Aspergillus terreus</i> isolates differing in Amphotericin B susceptibility. Med Microbiol Immunol 202: 379-389. Segal E et al. (2014) In vitro activity of combinations of Nystatin-Intralipid and antifungals against <i>Aspergillus terreus</i>. in preparation.</p>
5	Is your Working Group going to continue for the next three years?	yes