

# FungiScope™ – Global Emerging Fungal Infection Registry

D. Seidel<sup>1</sup>, L. Duran Graeff<sup>1</sup>, M.J.G.T. Vehreschild<sup>1</sup>, P. Köhler<sup>1</sup>, B. Liss<sup>1</sup>, F. Müller<sup>1</sup>, H. Wisplinghoff<sup>2</sup>, J.J. Vehreschild<sup>1</sup>, O.A. Cornely<sup>1,3</sup>  
on behalf of The FungiScope ECMM/ISHAM Working Group

<sup>1</sup>1st Department of Internal Medicine, University of Cologne, Cologne, Germany, <sup>2</sup>Institute for Medical Microbiology, Immunology and Hygiene, University of Cologne, Cologne, Germany,  
<sup>3</sup>Clinical Trials Center Cologne, ZKS Köln, BMBF 01KN1106, University of Cologne, Cologne, Germany

A working group of:



In cooperation with:



www.fungiscope.net



## Background

The incidence of invasive fungal infections (IFI) is increasing worldwide. Evermore invasive medical care as well as increasing numbers of long-term immunocompromised patients are considered major contributing factors.

A wide variety of so-called “emerging fungi” accounts for a significant proportion of IFI. Data on their epidemiology, pathogen biology and clinical course is scarce, impeding evidence-guided decision making in the clinical setting.

The **objective** of FungiScope™ – Global Emerging Fungal Infection Registry is to overcome these difficulties and eventually improve patient care. The registry has been created in 2003 and gained importance in the field. Recently, the FDA approved isavuconazole for the treatment of invasive mucormycosis on the basis of data from the registry.

## Methods

✓ Documenting clinical patient data in an online case report form:

**Inclusion criteria:** Cultural, histopathological or molecular biological evidence of IFI

**Exclusion criteria:** Infections due to *Aspergillus* spp., *Candida* spp., *Cryptococcus neoformans*, *Pneumocystis jiroveci* and any endemic fungal infection

Colonization

✓ Analysis of host factors, clinical presentation, treatment and outcome

✓ **FungiThek:** Biobanking and reference analysis of cultured isolates, as well as exchange with other centers for research projects

✓ **FungiQuest:** A search engine of the FungiScope database [www.fungiquest.net](http://www.fungiquest.net)

✓ Therapeutic antifungal drug monitoring

✓ The registry is open to everybody wishing to collaborate and contribute a case of an emerging fungal infection

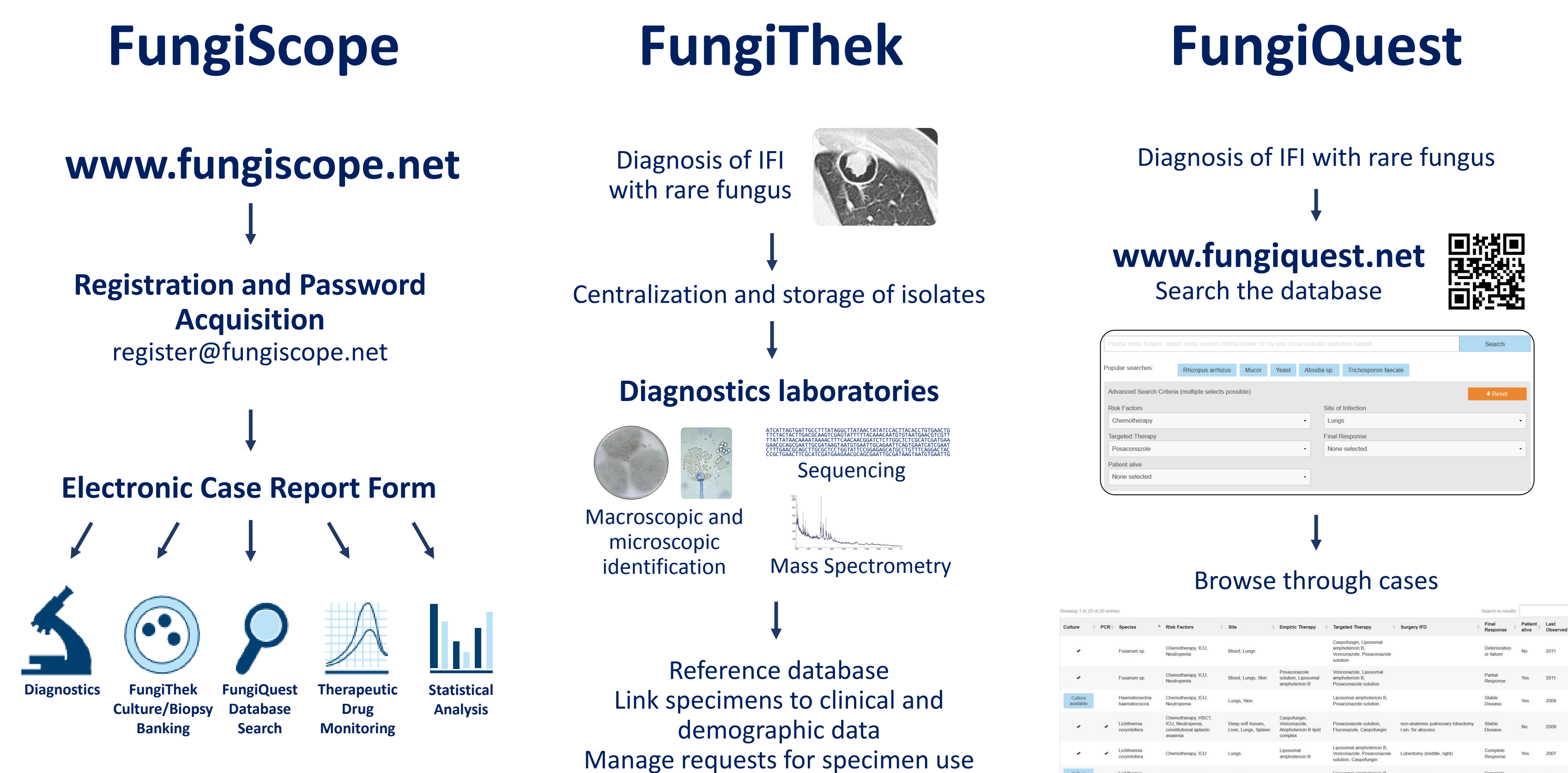


Figure 1. Project overview.

## Partner countries

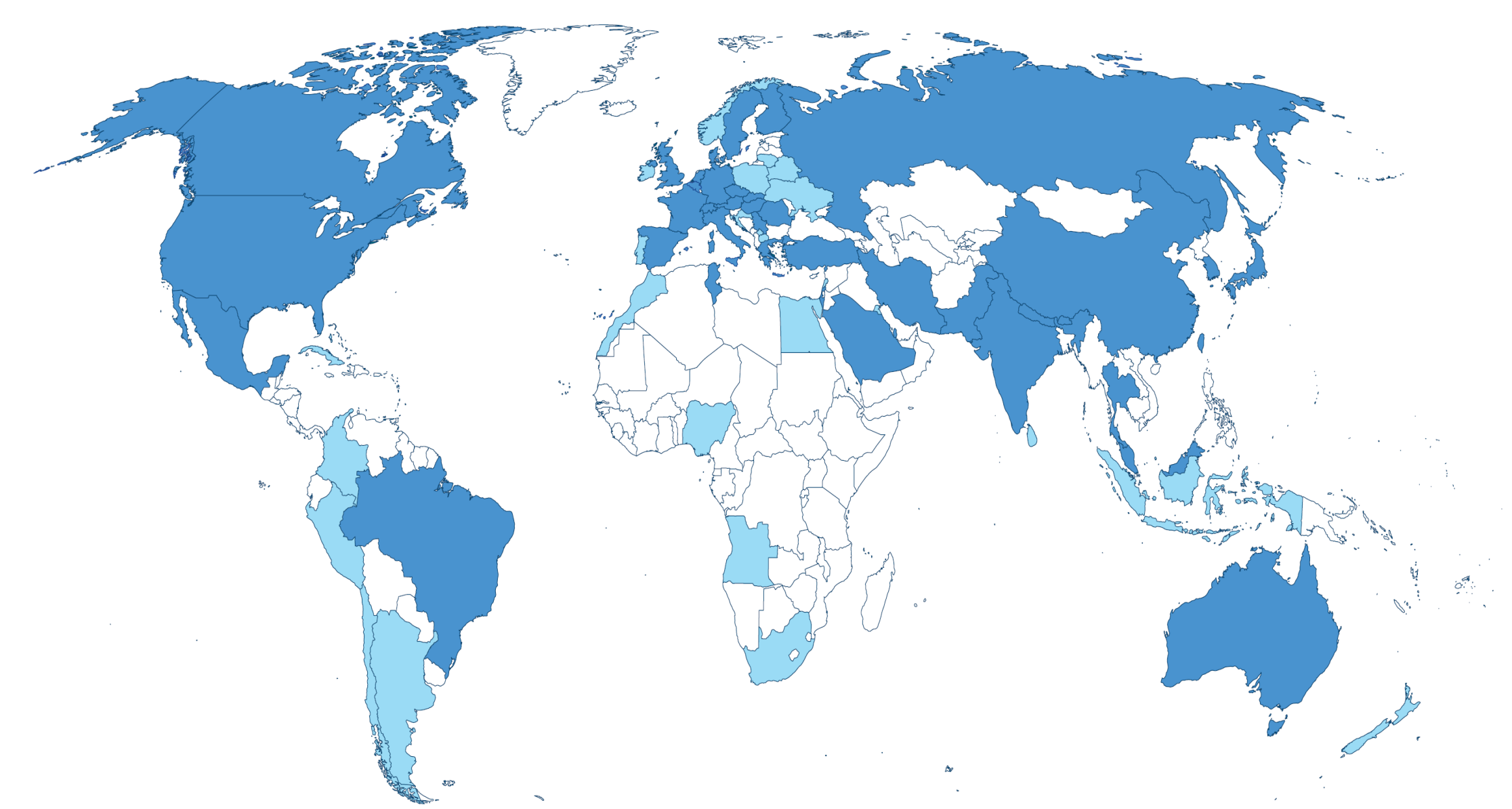


Figure 2. FungiScope has collaborators in 63 countries (colored). Cases were documented from 33 countries (dark blue).

## Results

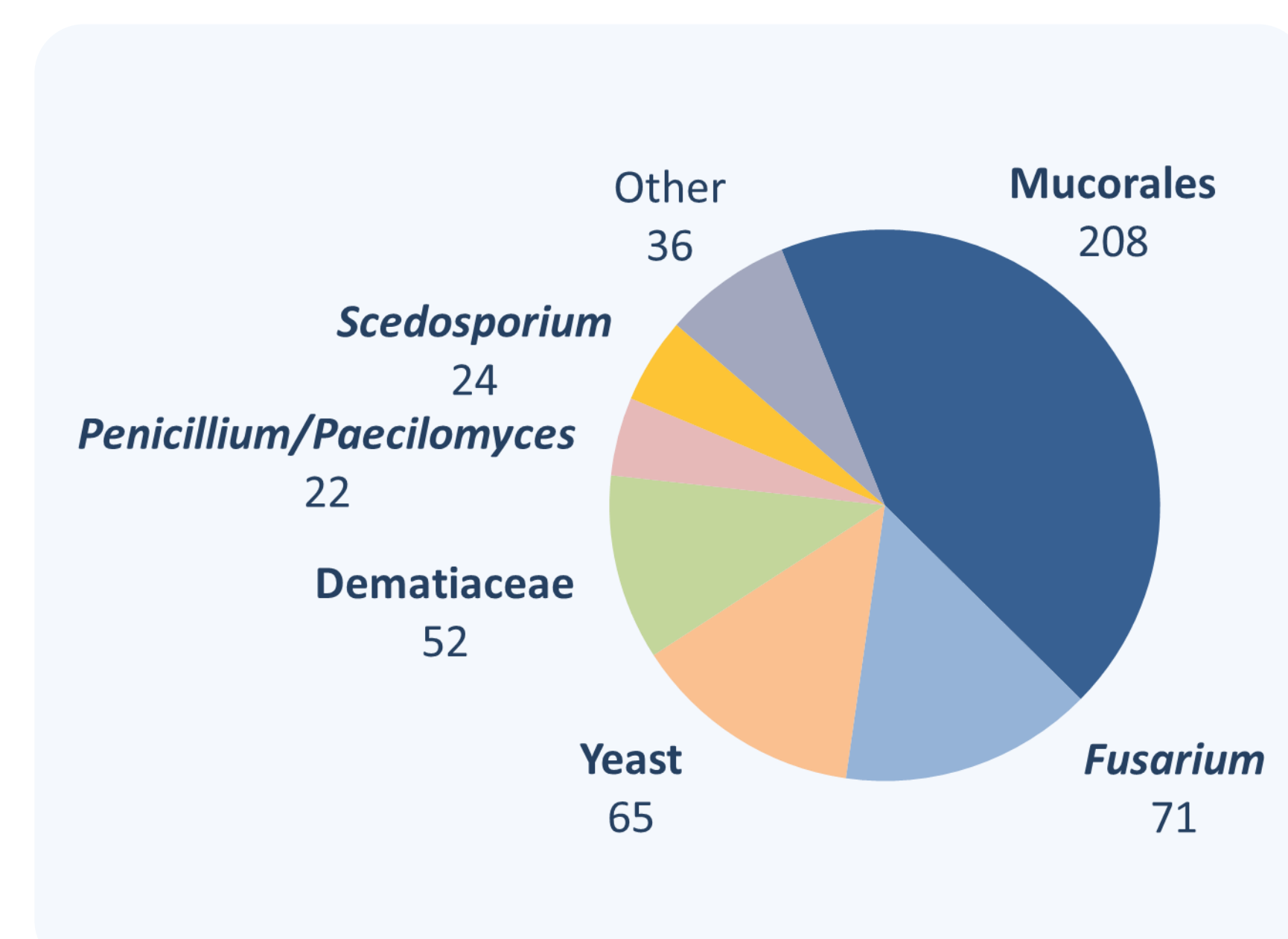


Figure 3. Distribution of Pathogens

From January 2003 – January 2016, 478 cases have been documented and considered valid – Mucorales are the most commonly registered pathogens, followed by *Fusarium* and yeast.

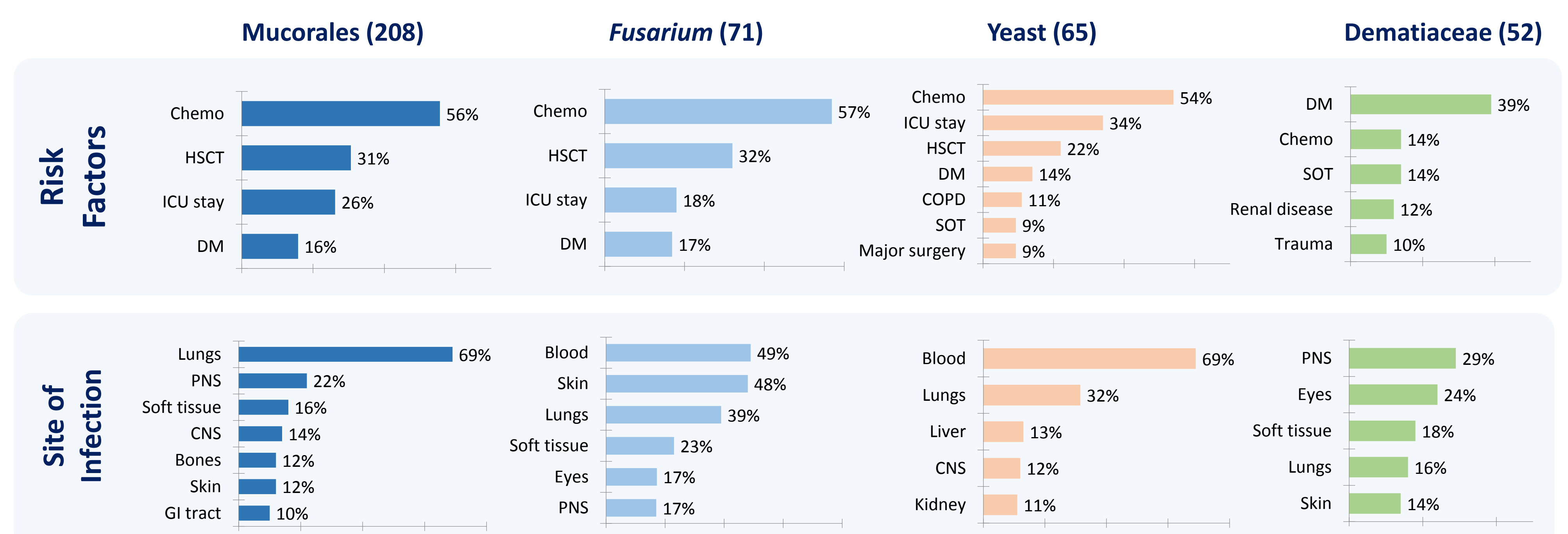


Figure 5. Risk factors and sites of infection for the four most common pathogens

Chemotherapy is the most important risk factor for most fungi except for Dematiaceae. The most common sites of infection vary greatly between the different fungi. Only the more common sites ( $\geq 10\%$ ) are shown.

Abbr.: Chemo Chemotherapy, HSCT Hematopoietic Stem Cell Transplantation, ICU Intensive Care Unit, COPD Chronic Obstructive Pulmonary Disease, CNS Central Nervous System, DM Diabetes mellitus, GI Gastrointestinal, PNS Paranasal sinuses, SOT Solid Organ Transplantation

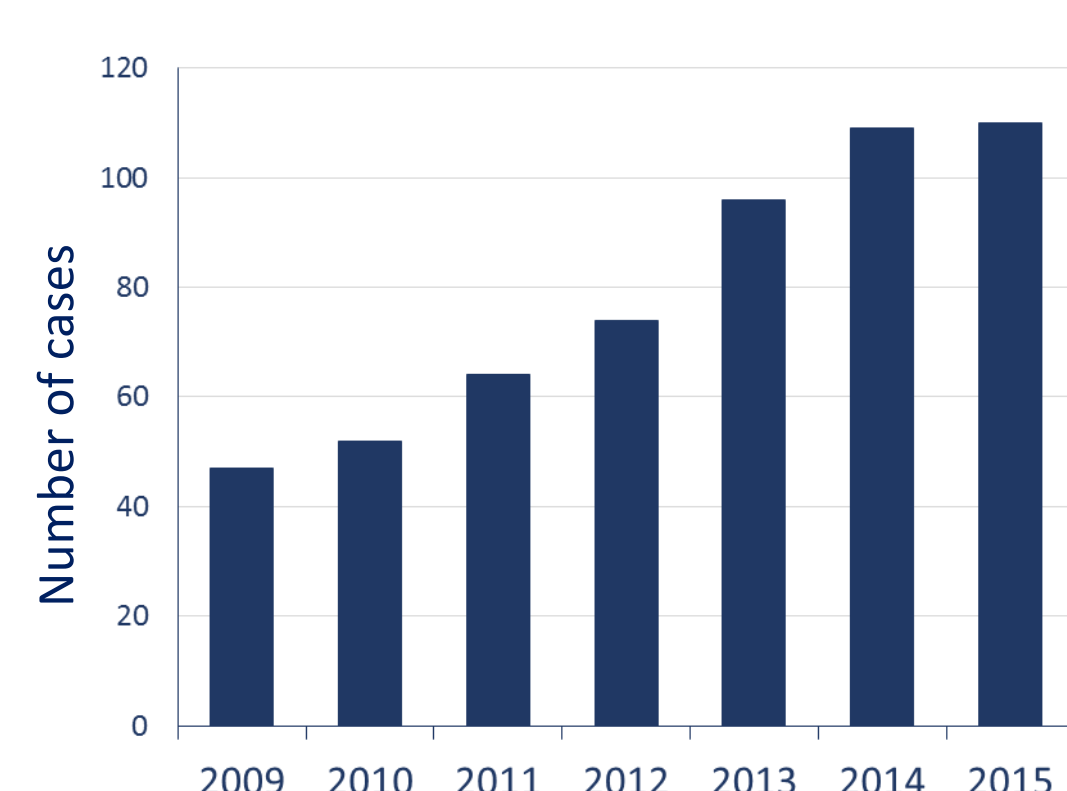


Figure 4. Annual case documentation

Numbers of cases documented per year are shown for the years 2009 until 2015.

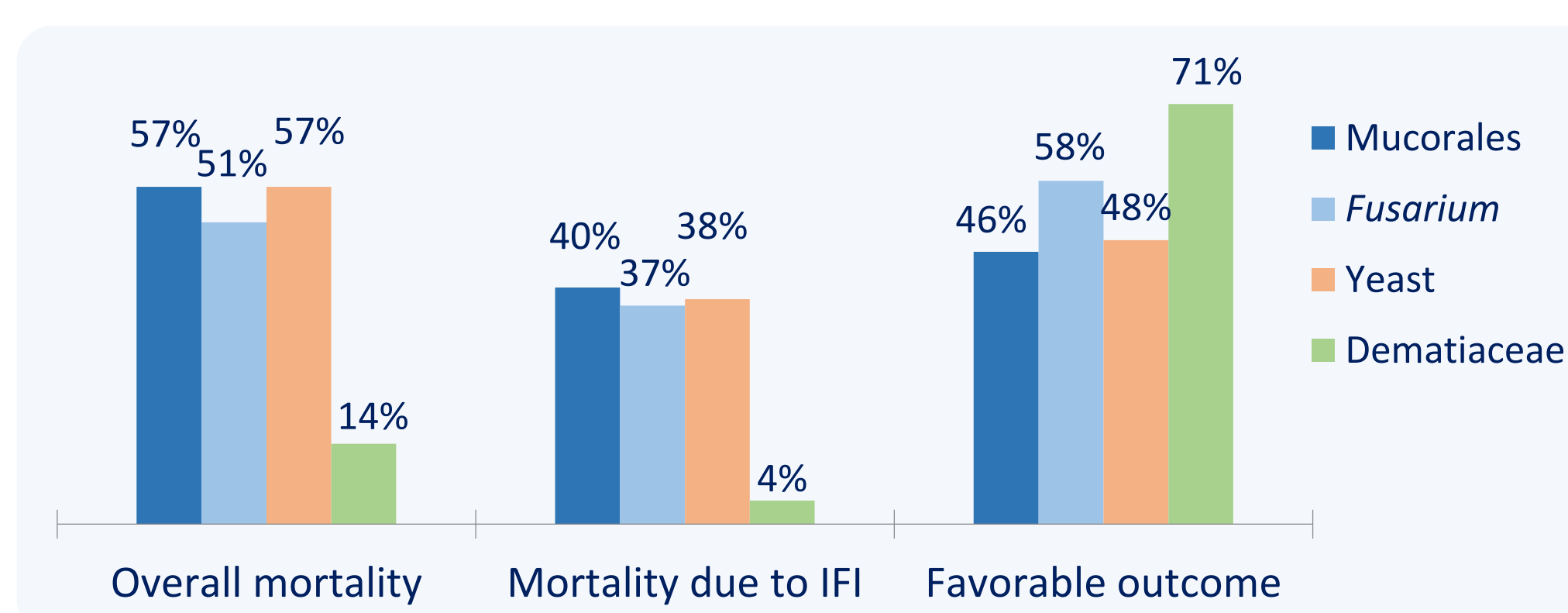


Figure 6: Outcome for the four most common pathogens

Outcome is poor for most infections with emerging fungi with the exception of IFI due to Dematiaceae. Favorable outcome is defined as complete or stable disease at final assessment.

## Conclusions

- ✓ Increasing relevance of rare IFI
- ✓ Efficient method: 478 cases of rare IFI from Europe, Asia, and North and South America have been documented
- ✓ Actively collecting fungal isolates for central identification and research
- ✓ Increasing annual case numbers
- ✓ Improved FungiQuest website