

Recent Increase in Fluconazole-Nonsusceptible *Candida parapsilosis* in a Global Surveillance with the Expansion of the Erg11 Y132F genotype and a Rapid Detection Method to Detect This Alteration

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Objective

- We evaluated the rates of fluconazole-nonsusceptible *C. parapsilosis* among isolates from 2018 to 2021.
- Additionally, we developed a PCR assay for the rapid detection of the Y132F Erg11 alteration in *C. parapsilosis*.

Methods

- 1,103 *C. parapsilosis* isolates from invasive candidiasis were submitted to the SENTRY Antifungal Surveillance Program.
- Isolates were susceptibility tested using the CLSI reference broth microdilution method.
- Fluconazole-nonsusceptible isolates (MIC, ≥ 4 mg/L) were submitted to a PCR assay to detect the Erg11 Y132F alteration.
- Positive ($n=38$) and negative ($n=18$) controls previously submitted to whole genome sequencing were tested to evaluate this method.

Conclusions

- Fluconazole-nonsusceptible *C. parapsilosis* rates increased from 10.2% in 2018 to 15.4% in 2021.
- These isolates were detected in 12 of 30 surveyed countries.
- The highest rates of Erg11 Y132F were observed in Europe (92.7%), followed by the US (60.9%).
- The Y132F Erg11 alteration was detected in 83.2% of the isolates (104/125) collected during 2018–2021 by the designed PCR method.
- Y132F Erg11-positive isolates were mostly resistant to voriconazole, but posaconazole and itraconazole MIC values were all wildtype.
- Continuous monitoring is needed for isolates carrying the globally disseminated Y132F Erg11 alteration and their rapid detection is critical.

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Figure 1. Fluconazole nonsusceptible *C. parapsilosis* (A) over time and (B) by country

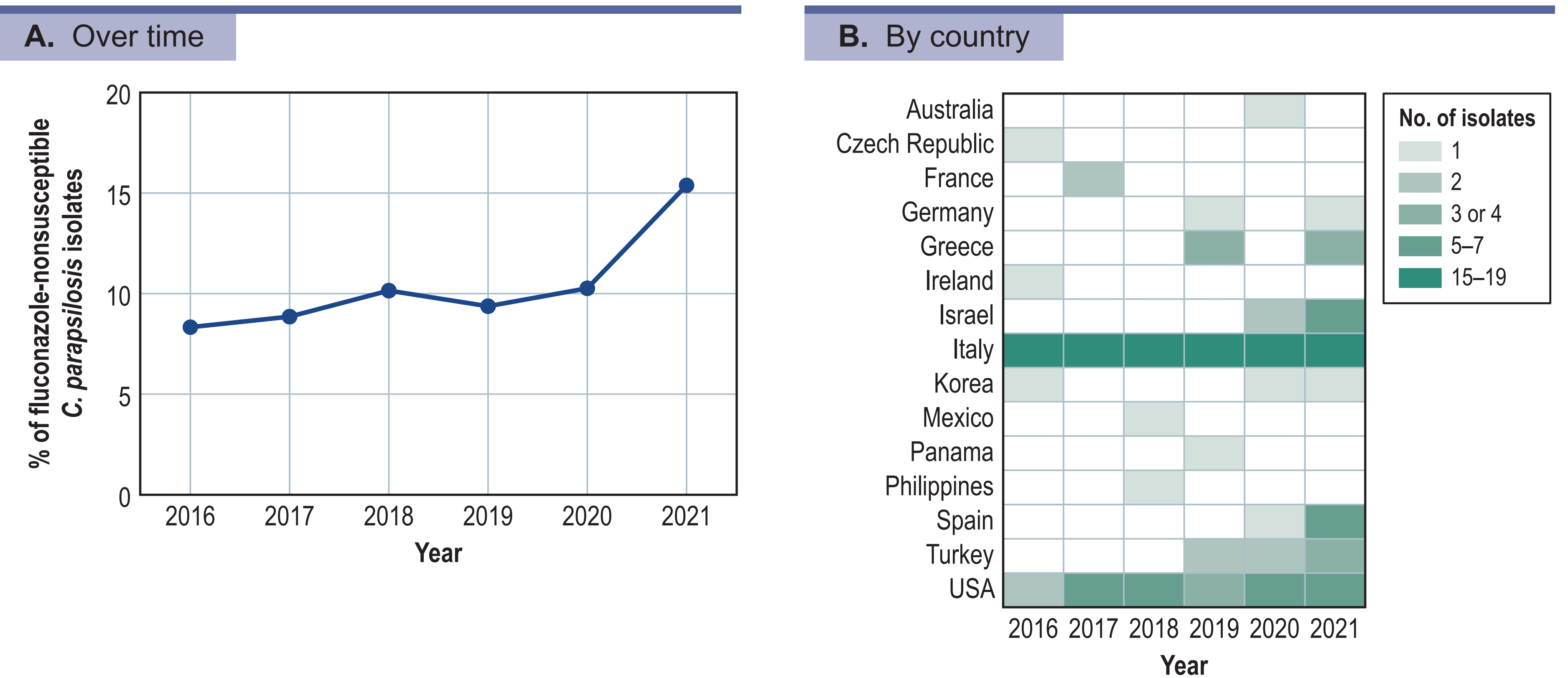
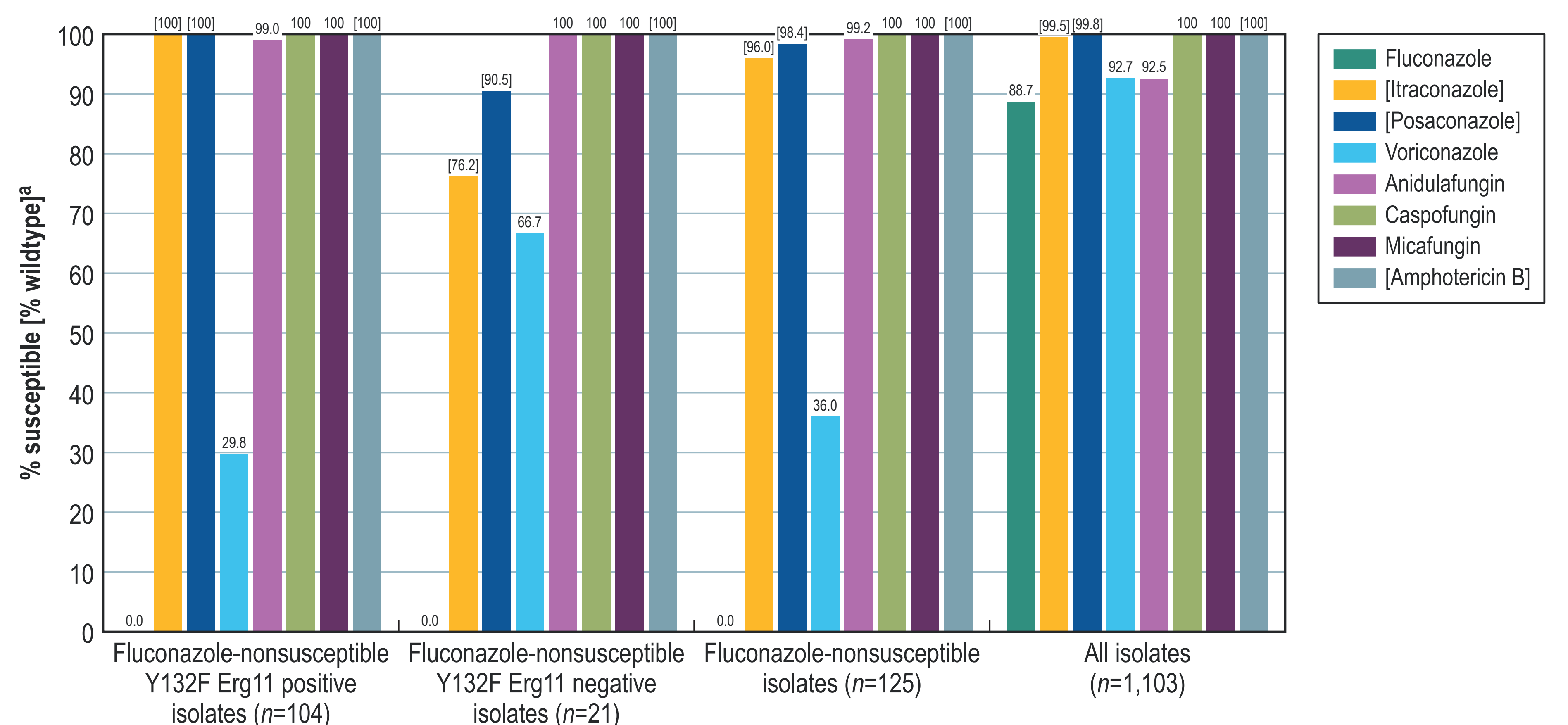


Figure 2. Antifungal susceptibility rates of *C. parapsilosis* isolates



^a The breakpoint criteria and epidemiological cut-off values used were published by CLSI in the third edition of the M2744S (2022) and the fourth edition of the M57 (2022).

Table 1. PCR-based Erg11-Y132F detection results for fluconazole-nonsusceptible *C. parapsilosis* isolates from 2018–2021

Continent (no. tested) Country (no. tested) ^a	No. (%) of NS isolates	No. (%) of NS isolates detected as	
		Y132F positive	Y132F negative
All geographical regions (1,103)	125 (11.3)	104 (83.2)	21 (16.8)
Asia Pacific (127)	4 (3.1)	0 (0)	4 (100.0)
Australia (37)	1 (2.7)	0 (0)	1 (100.0)
Korea (33)	2 (6.1)	0 (0)	2 (100.0)
Philippines (16)	1 (6.2)	0 (0)	1 (100.0)
Europe (466)	96 (20.6)	90 (93.8)	11 (11.5)
Germany (51)	2 (3.9)	0 (0)	2 (100.0)
Greece (15)	7 (46.7)	6 (85.7)	1 (14.3)
Israel (13)	7 (53.8)	7 (100.0)	0 (0)
Italy (209)	66 (31.6)	63 (95.5)	3 (4.5)
Spain (47)	6 (12.8)	6 (100.0) ^b	0 (0)
Turkey (31)	8 (25.8)	8 (100.0)	0 (0)
Latin America (124)	2 (1.6)	0 (0)	2 (100.0)
Mexico (42)	1 (2.4)	0 (0)	1 (100.0)
Panama (20)	1 (5.0)	0 (0)	1 (100.0)
North America (386)	23 (6.0)	14 (60.9)	9 (39.1)
USA (383)	23 (6.0)	14 (60.9)	9 (39.1)

Abbreviations: NS, nonsusceptible.
^a Countries without NS isolates are not shown.
^b Five isolates from Spain carried a dual Erg11 genotype, each of which harbored 1 Y132F allele and 1 WT allele. These isolates should be treated as having a positive resistance genotype.