Studies on Fungicide Sensitivity and Fitness Characteristics of *Alternaria solani* Isolates

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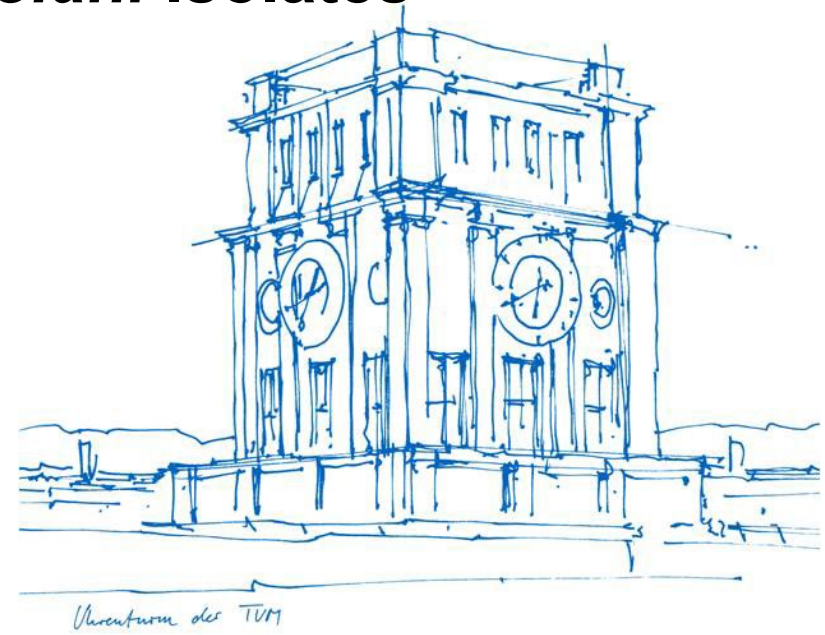
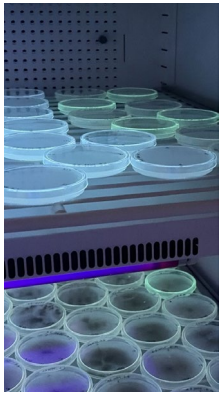
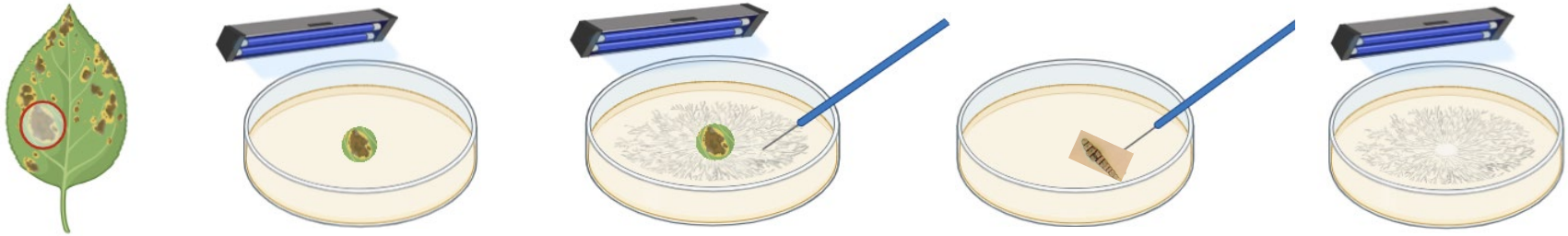


Single Spore Isolation





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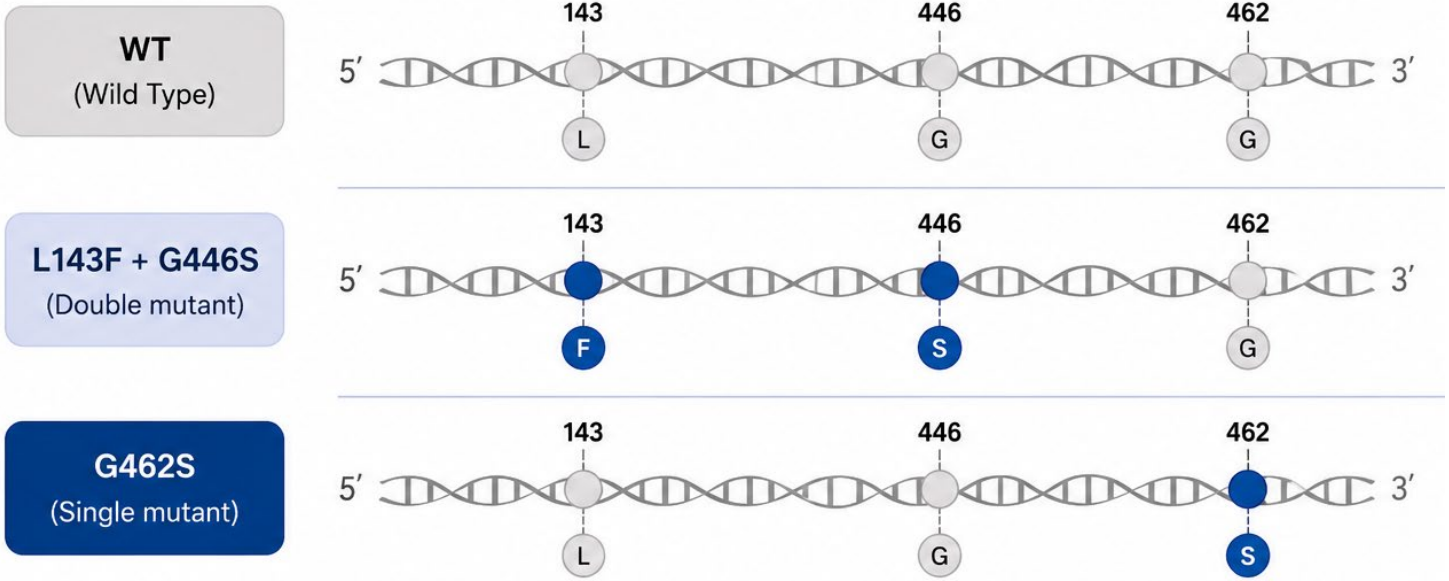
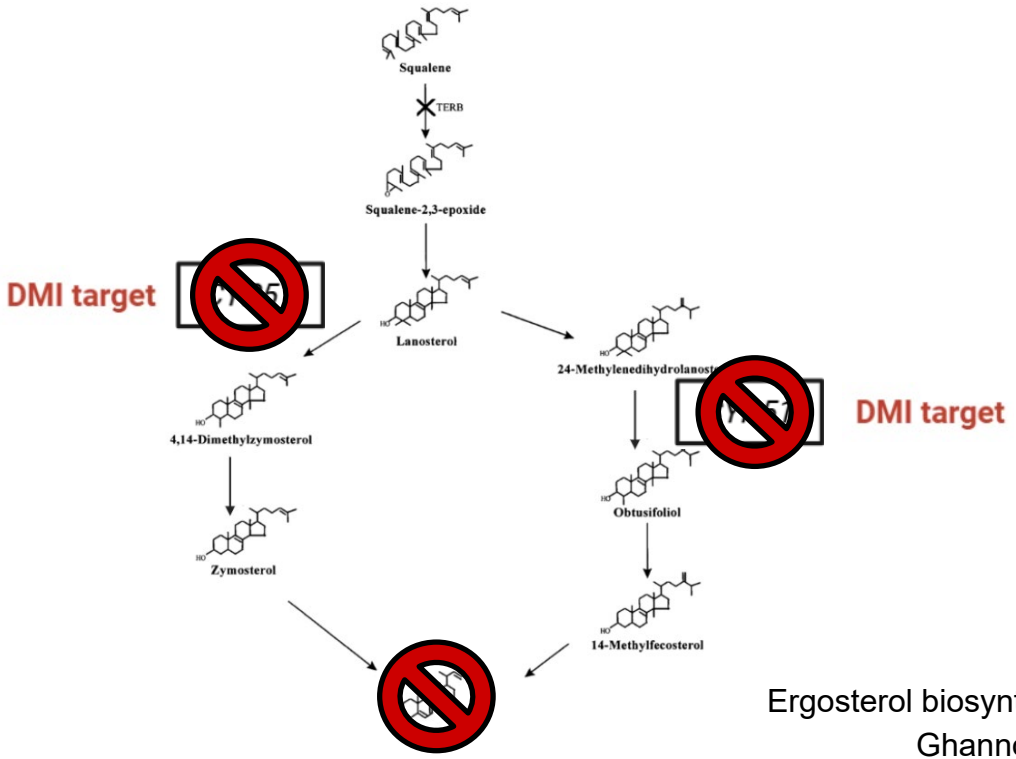
CYP51 Mutations



Demethylation Inhibitors



Ergosterol biosynthesis pathway modified after Ghannoum & Rice (1999)

Greenhouse Experiment - Infection Ability

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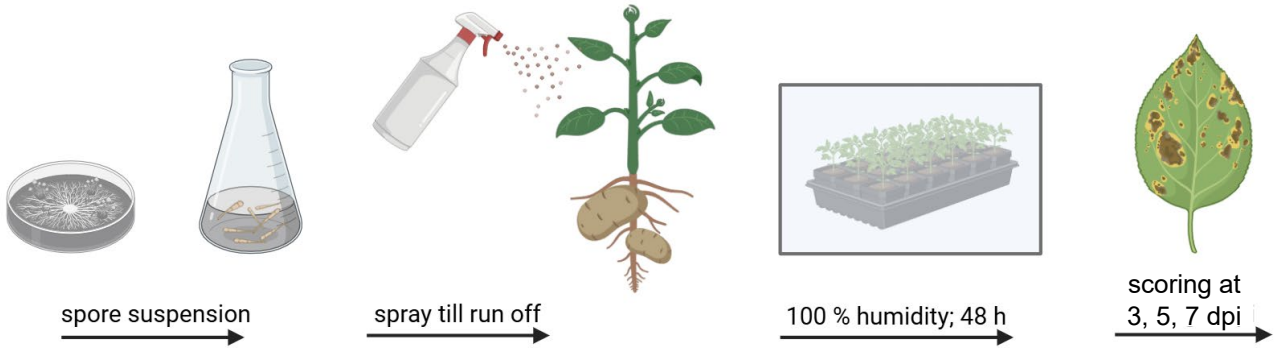


Experimental scale **2024**: 76 *A. solani* isolates = **984 potato plants in total**.

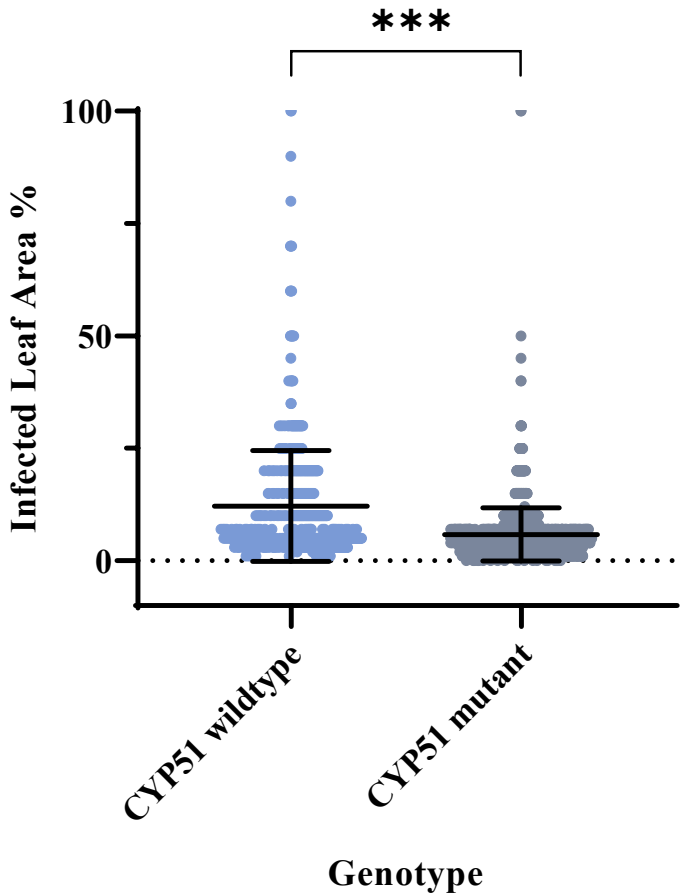
Experimental scale **2025**: 90 *A. solani* isolates = **1112 potato plants in total**.
In progress

Infection Ability - Results

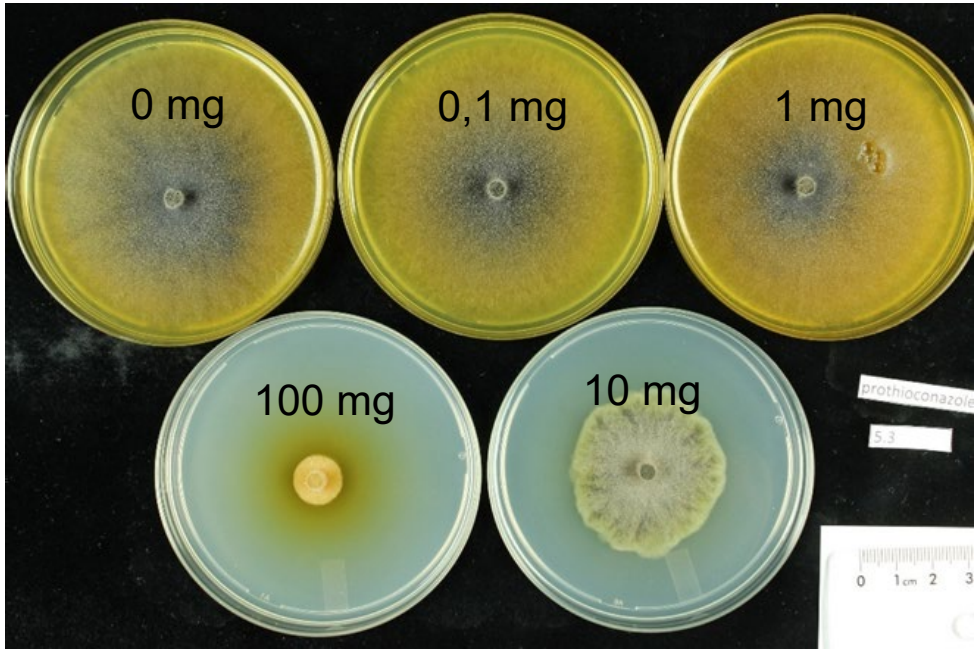
n(WT) = 717, n(mutant) = 1734

median infected leaf area: WT 7 %, mutant 5 %

*** **p < 0.0001** (Mann-Whitney test)



EC_{50}-Values - Setup



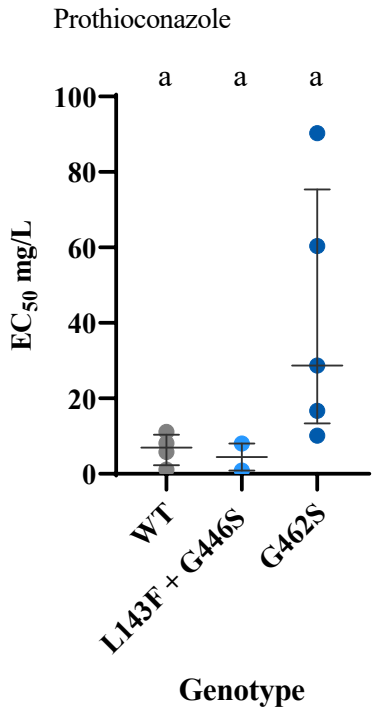
→ Prothioconazole

→ Difenoconazole

→ Mefentrifluconazole

EC_{50}-values calculated from dose-response curves

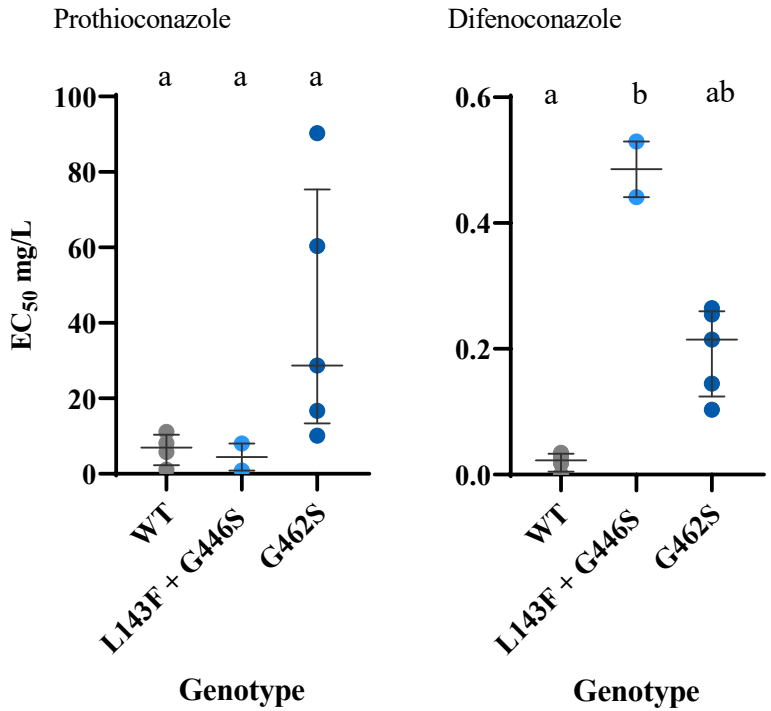
EC_{50}-Values



WT (n=4)
L143F+G446S (n=2)
G462S (n=5)

Kruskal-Wallis test
with Dunn's post hoc
multiple comparisons

EC_{50}-Values



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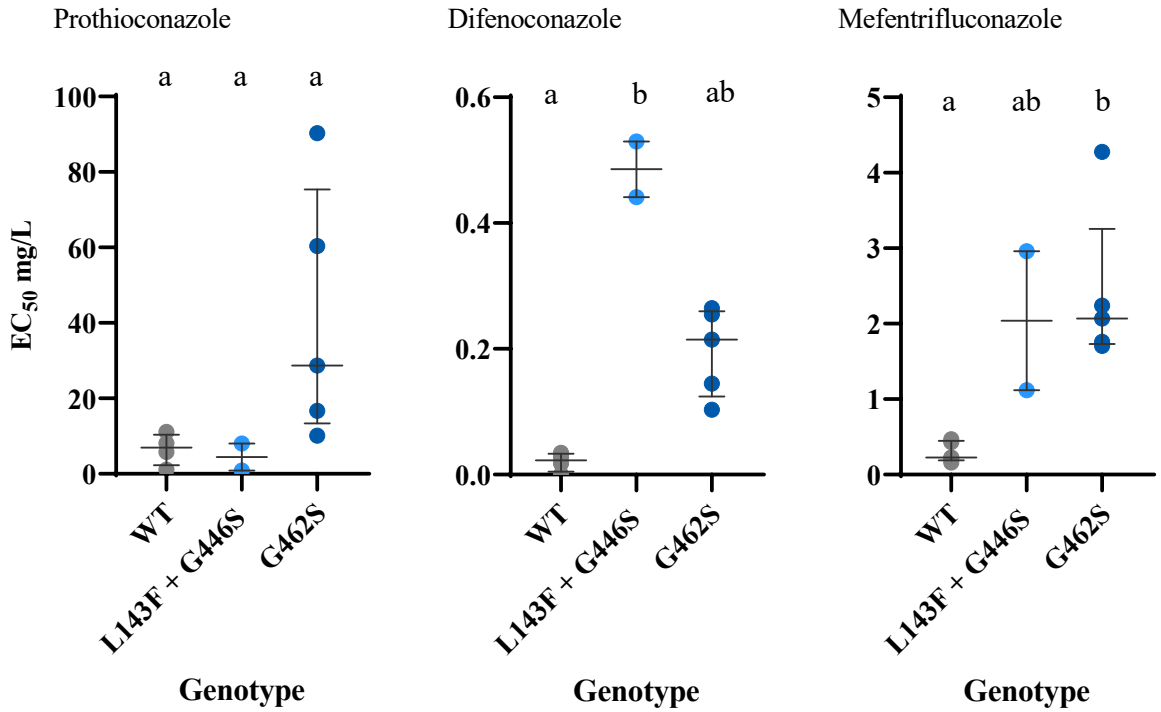

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L143F+G446S (n=2)
G462S (n=5)

Kruskal-Wallis test with Dunn's post hoc multiple comparisons

Conclusion & Outlook

- Mutant isolates showed slightly **reduced infection efficiency** compared to wild types, indicating **costs** in this **fitness parameter**.

- ***CYP51* mutations** are **established in** *A. solani* populations and cause moderate, fungicide-specific **reduced sensitivity**.

- EC_{50} testing of 2025 *Alternaria solani* isolates using microtiter plate assays
- Comparison of mycelial growth between different genotypes
- Field trials with different azole fungicides and genotypes

Acknowledgements

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