

Quantifying Pollen Traits to Build a Mathematical Model of Pollen Competition - a Biologist's Perspective

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The lack of ability to measure pollen traits in mixed pollinations has been a major hurdle in understanding the mechanisms of differential success of pollen during pollen competitions. Exploiting a well-characterized system of nonrandom mating in the small weedy plant, *Arabidopsis thaliana*, we use genetically marked pollen that can be visualized colorimetrically to quantify pollen traits and behaviors during pollen competitions. Previously, we used this and other assays to measure pollen viability, germination, tube growth, patterns of fertilization and seed abortion to address the question of what pollen traits differ that influence nonrandom mating. We now expand this study to include fifteen accessions of *Arabidopsis thaliana* with different competitive abilities to define which traits consistently correlate with high pollen performance, and to form the basis of a mathematical model of the process.