

# Live cell imaging of lipid droplet distribution and motility in the filamentous fungus *Ustilago maydis*

Submitted by

Benjamin Roland Alexander Meadows

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## Abstract

Lipid droplets (LDs) are organelles specialised for lipid metabolism and storage, found across the domains of life. They are dynamic in number and size, actively transported, and have diverse functions, many of which have only recently been identified. Despite this, they remain less well-characterised than many other organelles. While the motility of LDs has been noted in filamentous fungi, no study has yet investigated its mechanism.

In this study, several techniques were established for visualisation of LDs in live cells of the dimorphic fungus *Ustilago maydis*. This species is a prominent pathogen of maize (*Zea mays*) and an established model organism for intracellular trafficking. Distribution and motility patterns of LDs were investigated quantitatively in *U. maydis* cells under varying growth conditions, including during plant infection. Active transport of LDs was found to be microtubule-dependent, and dependent on specific motor proteins and organelle interactions.

# Table of contents

|   |    |
|---|----|
| Abstract  | 3  |
| Table of contents   | 4  |
| List of tables  | 5  |
| List of figures   | 5  |
| Acknowledgements  | 7  |
| Abbreviations   | 8  |
| 1. Introduction   | 9  |
| 1.1 Lipid droplets  | 9  |
| 1.2 History of the study of lipid droplets                      | 9  |
| 1.3 Lipid droplet structure and function                        | 11 |
| 1.4 Lipid droplets are highly conserved structures              | 14 |
| 1.5 Role in human disease                                       | 15 |
| 1.6 Economic importance   | 15 |
| 1.7 Biogenesis and dynamics                                     | 16 |
| 1.8 Active transport  | 17 |
| 1.9 Role in fungal pathogenicity                                | 18 |
| 1.10 The dimorphic pathogenic fungus <i>Ustilago maydis</i>     | 18 |
| 1.11 Summary  | 20 |
| 2. Results  | 21 |
| 2.1 Bioinformatics survey                                       | 21 |
| 2.2 Visualisation of lipid droplets                             | 25 |
| 2.3 Lipid droplet intracellular distribution                    | 32 |
| 2.4 Lipid droplet distribution during plant infection           | 35 |
| 2.5 Lipid droplet motility is microtubule-dependent             | 38 |
| 2.6 Lipid droplets comigrate with motor proteins and organelles | 45 |
| 3. Discussion   | 52 |
| 3.1 Bioinformatics  | 52 |
| 3.2 Distribution  | 53 |
| 3.3 Motility  | 54 |
| 4. Conclusion   | 57 |
| 5. Methods  | 58 |
| 5.1 Strains   | 58 |
| 5.2 Plasmid construction  | 59 |

|     |                                  |    |
|-----|----------------------------------|----|
| 5.3 | Growth conditions                | 60 |
| 5.4 | Fluorescent staining             | 61 |
| 5.5 | Inhibitor treatment              | 61 |
| 5.6 | Plant infection                  | 62 |
| 5.7 | Laser epifluorescence microscopy | 62 |
| 5.8 | Data analysis                    | 63 |
| 6.  | References                       | 64 |
| 7.  | Appendices                       | 72 |
| 7.1 | Appendix 1: Plasmid maps         | 72 |