**Supplementary Table 1:**

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| --- | --- | --- | --- | --- | --- |
|  | **Organism** | **Mutation** | **Phenotype** | **Disease/Pathogenesis** | **Reference** |
|  |  |  |  |  |  |
| ***Fungi*** | *Cochliobolus heterostrophus* | ΔDIP2 | Reduced or loss of virulence | Southern leaf blight | (Lu et al., 2003) |
| *Cochliobolus victoriae* | Reduced or loss of virulence | Victoria blight |
| *Gibberella zeae* | Reduced or loss of virulence | Fusarium head blight, |
| *Magnaporthe oryzae* | ΔDIP2 | Loss of Virulence | Rice blast/blight | (Wang et al., 2016) |
| *Coccidioides posadasii* | ΔDIP2 | Loss of Virulence | Valley fever | (Narra et al., 2016; Shubitz et al., 2018) |
|  |  |  |  |  |  |
| ***Animals*** | *Caenorhabditis elegans* | ΔDIP2 | Increased ectopic neurite sprouting, branching and axon regeneration | - | (Noblett et al., 2019) |
| *Drosophila melanogaster* | ΔDIP2 | Axon branching and guidance defect in mushroom-body neurons | - | (Nitta et al., 2017) |
| *Mus musculus* | ΔDIP2a | Defective dendritic spine morphogenesis and reduced synaptic transmission | Autism-like behaviour | (Ma et al., 2019) |
| Diet dependent growth defects | - | (Kinatukara et al., 2020) |
| ΔDIP2b | Excessive axonal outgrowth, Reduced synaptic transmission | - | (Xing et al., 2020) |
| Defective lung formation, Peri-natal lethality | - | (Sah et al., 2020) |
| *Homo sapiens (RKO cell line)* | ΔDIP2c | Induction of epithelial-mesenchymal transition and enhanced cell motility |  | (Larsson et al., 2017) |
| *Homo sapiens* | DIP2a **#** | - | Developmental dyslexia | (Kong et al., 2016; Poelmans et al., 2009) |
| - | Autism | (Egger et al., 2014; Iossifov et al., 2012) |
| DIP2b **#** | - | Coronary artery disease | (Gong et al., 2018) |
| DIP2c **#** | - | Cancers | (Jiao et al., 2012; Rudin et al., 2012) |

#= SNP (single-nucleotide polymorphism), de novo frameshift/ nonsense variant, deletions