Phototropism VS Geotropism

in *Phycomyces blakesleeanus*

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Our organism's ID

Binomial name: *Phycomyces blakesleeanus*

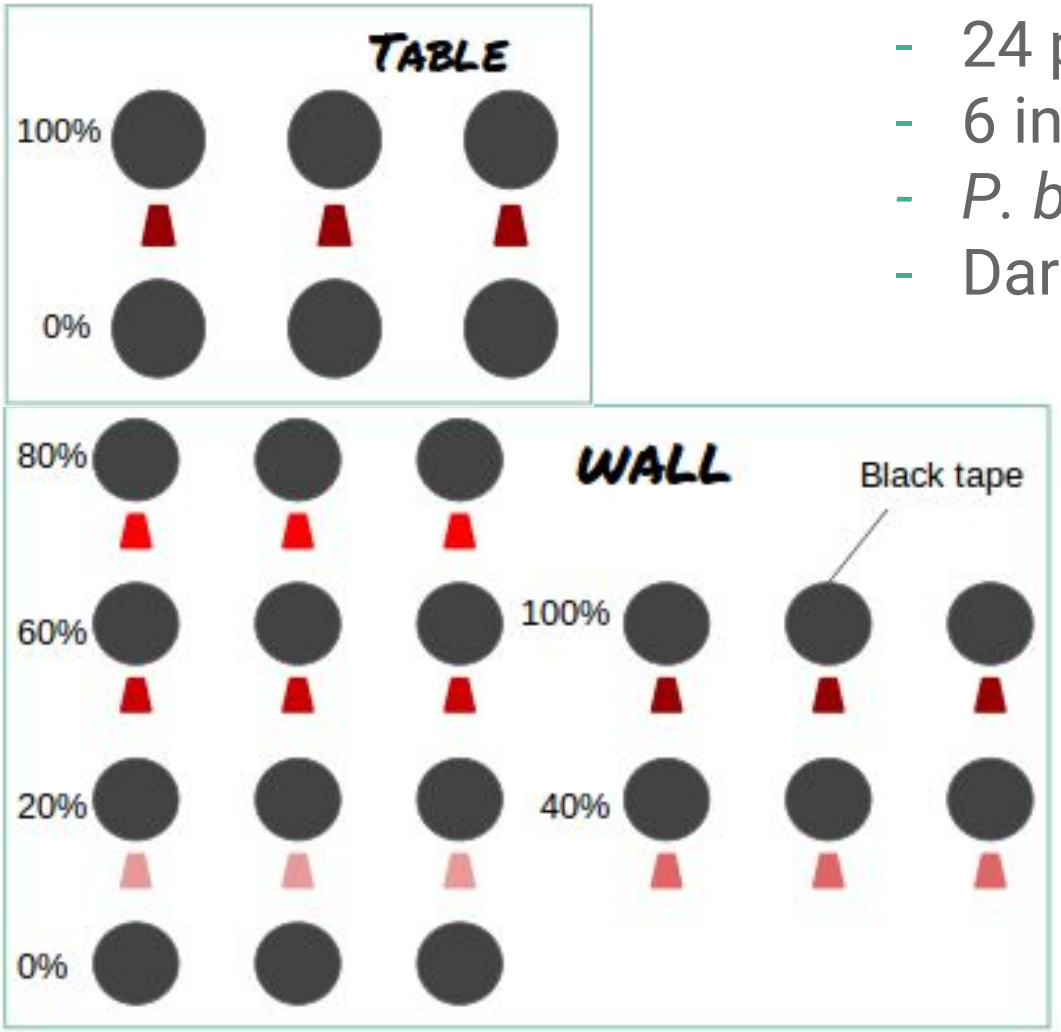
Phylum: Zygomycota

Sensible to:

- **Light:** Positive phototropism
- **Gravity:** Negative geotropism
- **Obstacles:** Avoidance

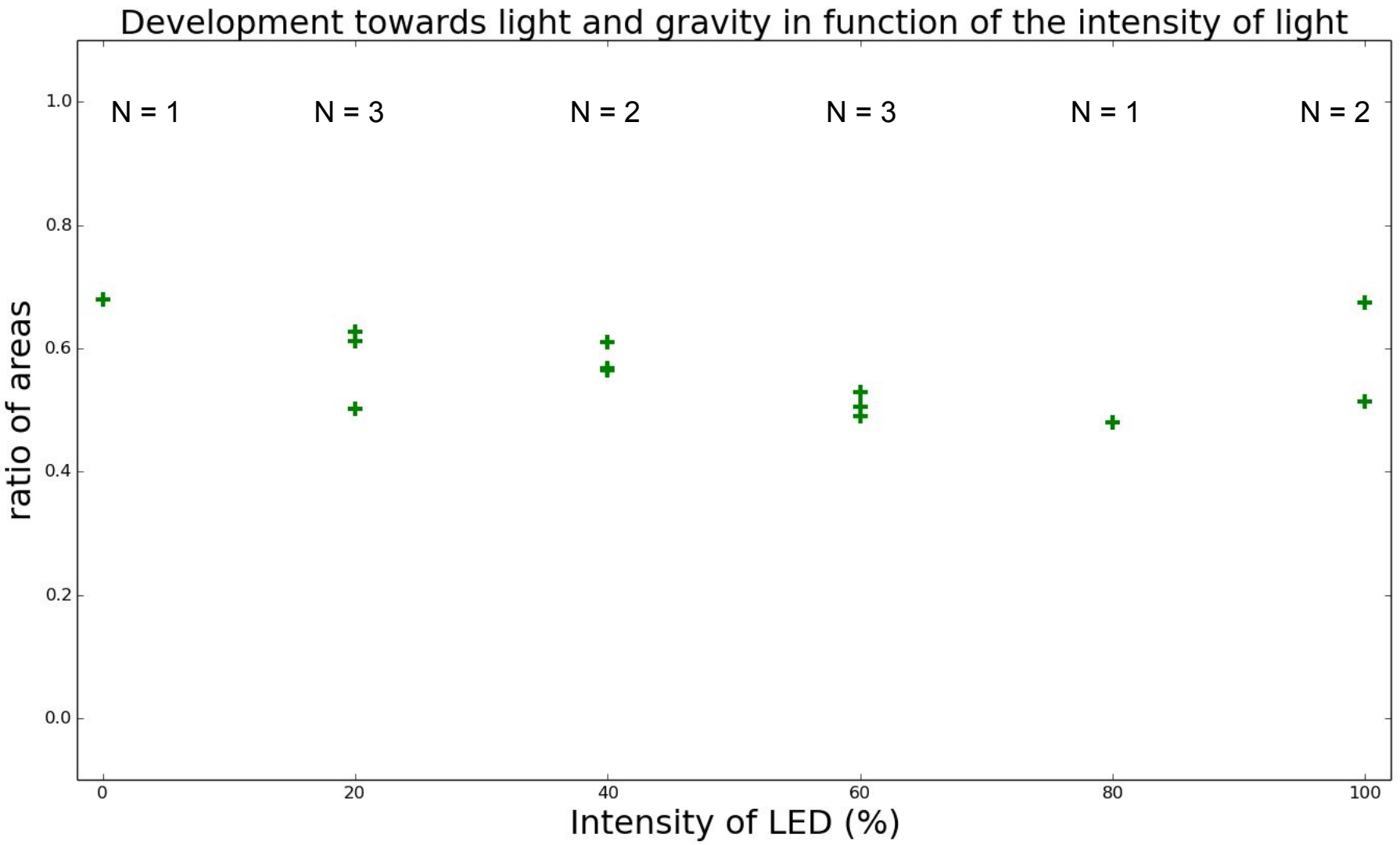
What is the threshold in which **phototropism** has more impact on *Phycomyces blakesleeanus* than **geotropism**?

Tapping plates on the wall

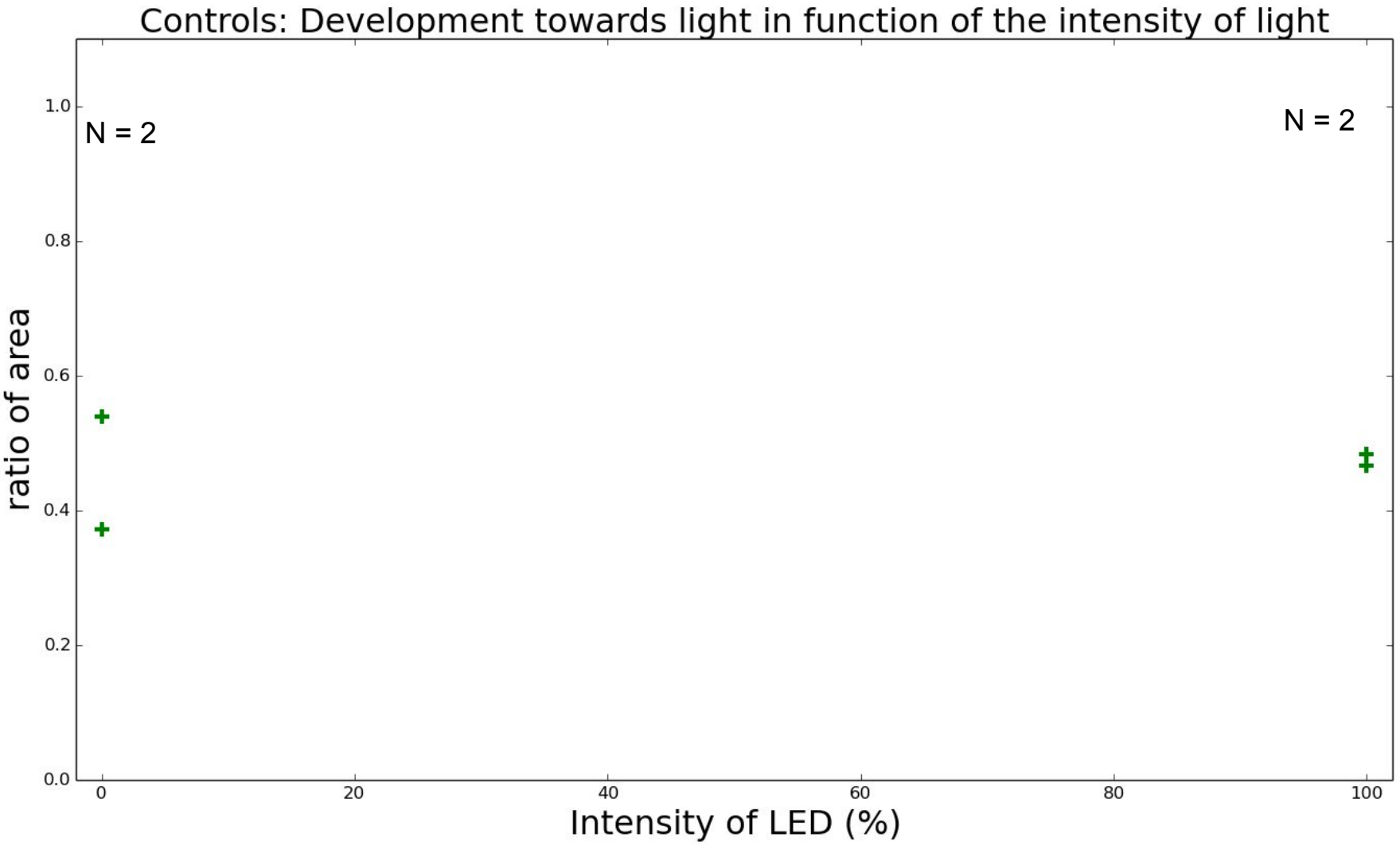


- 24 plates
- 6 intensities
- *P. blakesleeanus* culture
- Dark tape on each plate

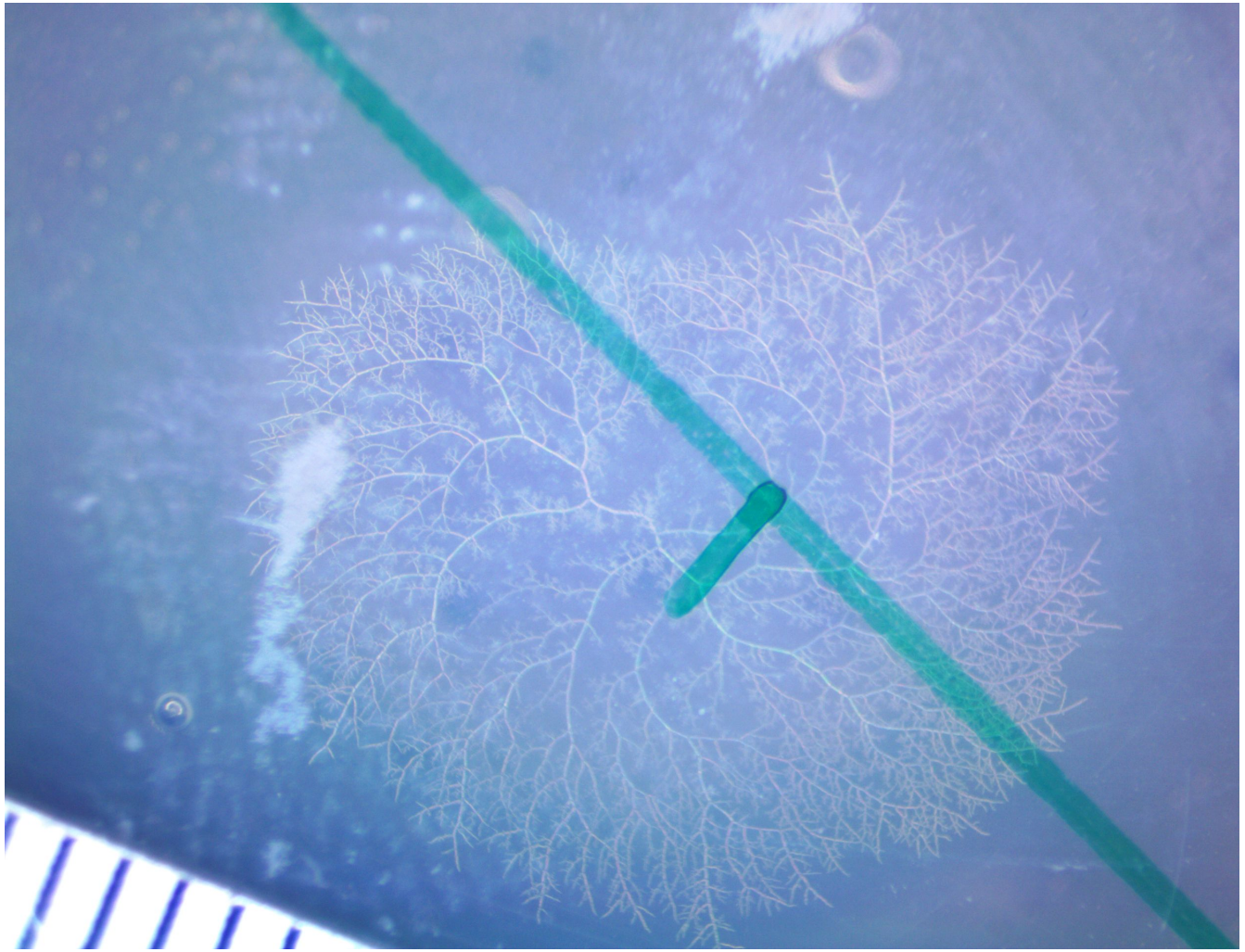
Which from light or gravity seems to be stronger



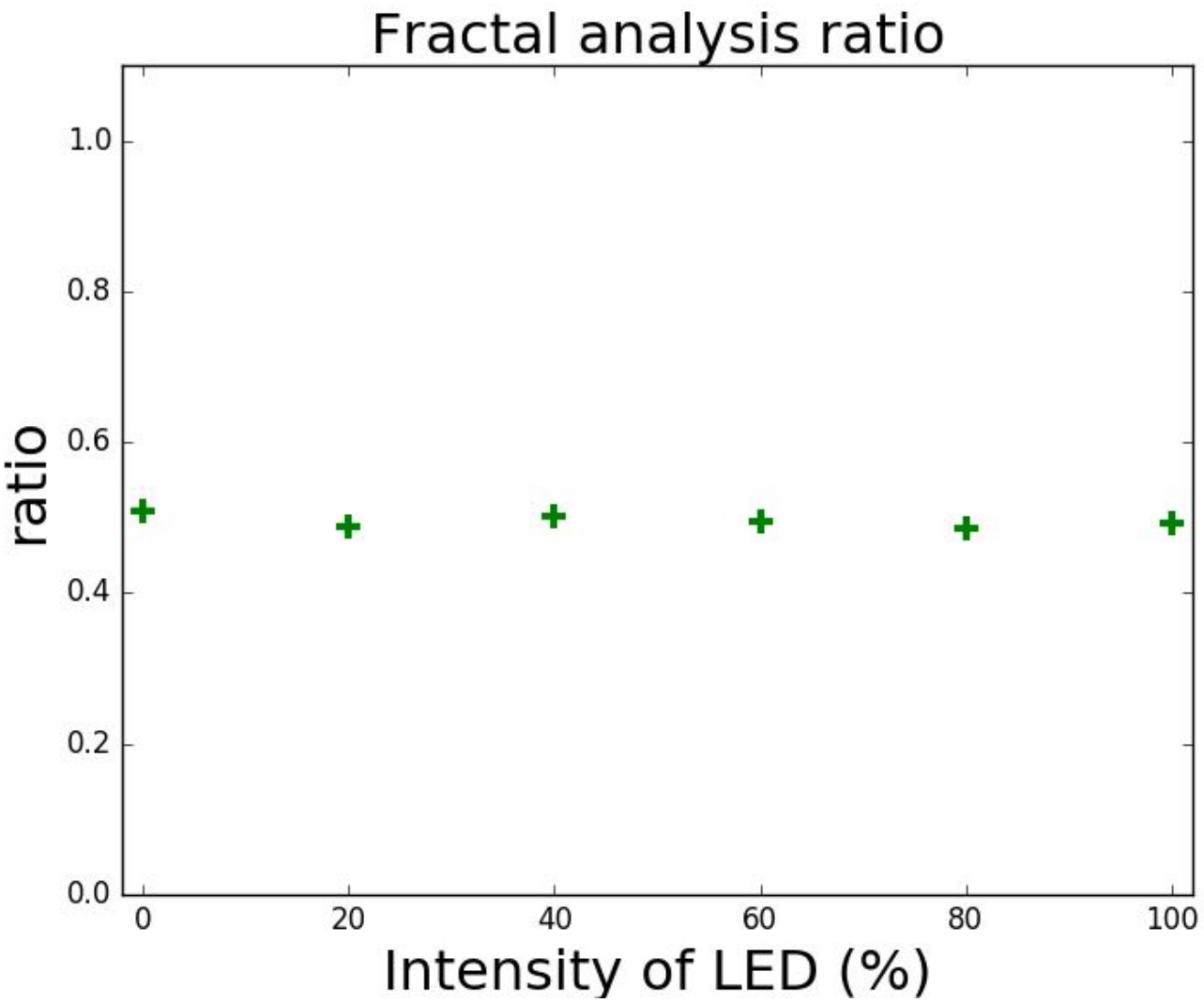
Control plates : placed horizontally to test the influence of gravity



Another way to analyze our data : fractal analysis

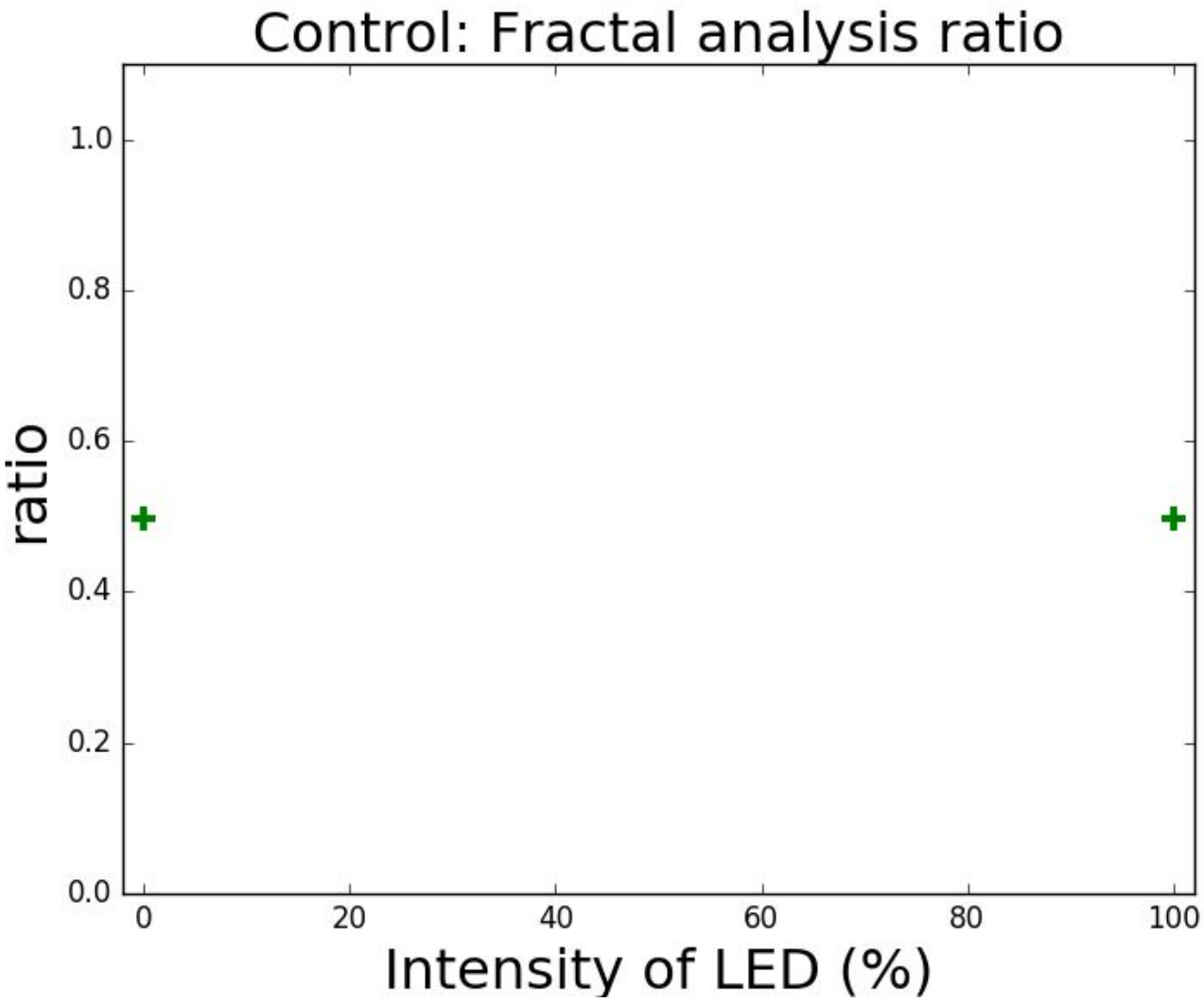


Another way to analyze our data : fractal analysis



N = 1

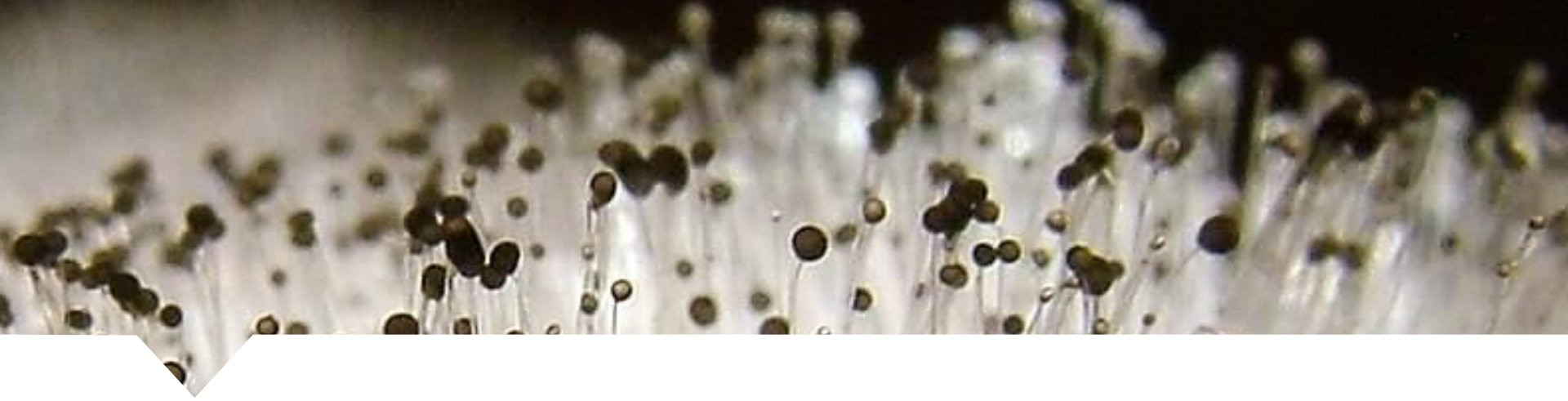
Control for fractals



N = 1

Experimental bias and possible explanations of the results

- Hypoxia
- Light
- Growth rate and sporangiophores
- Inoculation
- Replicates



Thank you for your attention

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Bibliography

- « Agar papa dextrosa ». *Wikipedia, la enciclopedia libre*, 3 janvier 2017.
- « An introduction to gravity perception in plants and fungi — A multiplicity of mechanisms ». Consulté le 4 février 2017.
- Barlow, P. W. « An introduction to gravity perception in plants and fungi — A multiplicity of mechanisms ». *Advances in Space Research*, Life and Gravity: Physiological and Morphological Responses, 17, nº 6–7 (1996): 69-72. doi:10.1016/0273-1177(95)00613-J.
- Corrochano, Luis M. « Sensory perception in the fungus Phycomyces blakesleeanus: a model organism for space research? », Vol. 41,
- Dennison, David S. « The Effect of Light on the Geotropic Responses of Phycomyces Sporangiophores ». *The Journal of General Physiology* 47, nº 4 (1 mars 1964): 651-65. doi:10.1085/jgp.47.4.651.
- Galland, P. « The Sporangiophore of Phycomyces Blakesleeanus: A Tool to Investigate Fungal Gravireception and Graviresponses ». *Plant Biology (Stuttgart, Germany)* 16 Suppl 1 (janvier 2014): 58-68. doi:10.1111/plb.12108.
- Galland, Paul, et Vincenzo E. A. Russo. « Growth-Rate Adaptation of Phycomyces Sporangiophores to Partial Depletion of Oxygen ». *Planta* 161, nº 2 (1 mai 1984): 137-41. doi:10.1007/BF00395473.
- Grolig, Franz, Peter Eibel, Christine Schimek, Tanja Schapat, David S. Dennison, et Paul A. Galland. « Interaction between Gravitropism and Phototropism in Sporangiophores of Phycomyces Blakesleeanus ». *Plant Physiology* 123, nº 2 (6 janvier 2000): 765-76. doi:10.1104/pp.123.2.765.
- « Growth Rate Fluctuations in Phycomyces Sporangiophores ». Consulté le 5 février 2017.
- Kern, V. D. « Gravitropism of basidiomycetous fungi — On Earth and in microgravity ». *Advances in Space Research*, Life Sciences: Microgravity Research II, 24, nº 6 (1999): 697-706. doi:10.1016/S0273-1177(99)00401-9.
- Mehta, B. J., L. M. Salgado, E. R. Bejarano, et E. Cerda-Olmedo. « New Mutants of Phycomyces Blakesleeanus for (Beta)-Carotene Production. » *Applied and Environmental Microbiology* 63, nº 9 (9 janvier 1997): 3657-61.
- « Screening of chitin deacetylase from Mucoralean strains (Zygomycetes) and its relationship to cell growth rate ». Consulté le 6 février 2017.
- « Sensory physiology of phycomyces Blakesleeanus - chp%3A10.1007%2F3-540-09958-1_3.pdf ». Consulté le 3 février 2017.
- « STANDARD GROWTH CONDITIONS AND VARIATIONS ». Consulté le 5 février 2017.