

Cologne Evolution Colloquium

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Laboratory evolution experiments uncover the emergence of resistance upon microtubule hyper-stabilization

We aimed at investigating the evolutionary path towards resistance to microtubule hyper-stabilization. We evolved in the lab for over 190 generations yeast cells carrying the hyper-stabilizing *tub2-150* mutation in the β -*tubulin* gene. We found that *tub2-150* mutants were able to evolve and recover the initial growth defect by two temporally distinct solutions. The first evolutionary solution was the selection of recurrent aneuploidies driven by the beneficial duplication of specific genes. In the long-term evolution, aneuploidy was substituted by fitter point mutations in *TUB* genes. Some representative *TUB* mutations, when re-introduced in the mutant ancestor, rescued growth of *tub2-150* cells by recovering microtubule dynamics. Our results provide new insights on adaptive evolution following the perturbation of an essential component such as microtubules, and potentially lead to the development of new strategies to counteract the emergence of resistance to drugs which stabilize microtubules.

Monday, February 5, 2024, 17:00

Institute for Biological Physics, Zülpicher Str. 77a

Seminar Room 0.02, Ground Floor

Hosted by Tobias Bollenbach