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## TOR and GSK3 in the ciliate Paramecium tetraurelia

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(TOR) is a serine threonine kinase that regulates cellular processes in response to the stresses and nutrients in the environment. We investigated TOR signaling pathway in the ciliate Paramecium tetraurelia (*P. tetraurelia*). Using BLAST (Basic Local Alignment Search Tool) we identified orthologs of the mammalian TOR, LST8, Akt, Rheb, Rag A/B, Rag C/D, SNAT2, Tap42, S6K, PKA and GSK3 in the *P. tetraurelia*. With RNA interference technique we established that depletion of these orthologs reduced cellular proliferation and arrested cells between G1 and S stages of the cell cycle. Furthermore, GSK3 depletion produced round looking cells with short, sparse cilia, and GSK3 was localized to the pellicle and cilia of *P. tetraurelia*. In addition to these investigations, we determined that inhibition of PKA with H89 prevented re-growth of cilia in de-ciliated cells. Our results possibly suggest that GSK3 and PKA work together in the regulation of ciliary length and /or assembly in *P. tetraurelia*. We also hypothesize that these regulations are TOR dependent. 340 pp. Englisch.



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