

Honorary lecture. Molecular Cell Biology with Ciliates.

Work with Ciliates was Sometimes Faster than with Mammalian Cells

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Special features of ciliates allowed for the discovery of telomerases and of ribozymes - work having been honored by a Nobel Prize. After establishing the Prion concept with a fungus, work along these lines was followed up with *Paramecium* by Janine Beisson, before Nobel laureate S. Prusiner had established the Prion concept with mammalian cells. The function of cilia – inaccessible with slimy epithelia - was elucidated by M. Sleight, to give some examples from early work. Some salient, though more modest results also accumulated with ongoing establishment of *Paramecium* and *Tetrahymena* database work, paralleled by clear identification of domain structure and of immunogenic sequences for producing efficient antibodies. This in turn allowed for localization studies at the light and electron microscope level, as did work with the molecular marker green fluorescent protein. Molecular analysis also showed the frequent absence of binding sites for drugs which were well established for mammalian cells. A plethora of Ca²⁺-release channels was cloned, localized and analyzed functionally, thus serving as a paradigm for some parasitological work. Another important aspect was the time-resolved analysis of exocytosis stimulation, as it revealed high synchronicity also for exocytosis-coupled endocytosis, all within fractions of one second. This was several hundred times faster than reported for mammalian cells due to methodical impairment. Altogether, ciliates contributed to the progress of cell biology in widely different regards.