LABORATORY OF CELL STRUCTURE †

Associate Professor
OGAWA, Kazuo

Microtubules are polymers of α- and β-tubulin heterodimer. *In vitro*, we can induce microtubule formation at critical points where tubulins concentrate. *In vivo*, they are formed by γ-TuRC at the centrosome or may be formed by unknown protein(s) in the non-centrosome region. The faster growing end is defined as the plus-end of the microtubules. There are many plus-end tracking proteins of microtubules such as EB-1, CLIP-170, and dynactin et al. The minus-ends are considered to be the nucleation sites for microtubule polymerization. Microtubule nucleation at the non-centrosome region remained less clear.

Several antibodies were raised for answering this unsolved question and checked whether they stain the minus-end of microtubules by immunofluorescence microscopy. For simplicity, the primary cilia of three cell lines established in our laboratory were used instead of microtubules. If antibodies are able to react with the minus end of microtubules, they should bind to the base of primary cilia in the same way as γ-TuRC and antigens for those antibodies should exist there.

Finally one anti-serum successfully stained the bases of the primary cilia of cultured cells examined so far (Figure 1). I expect further interesting results will be forthcoming.

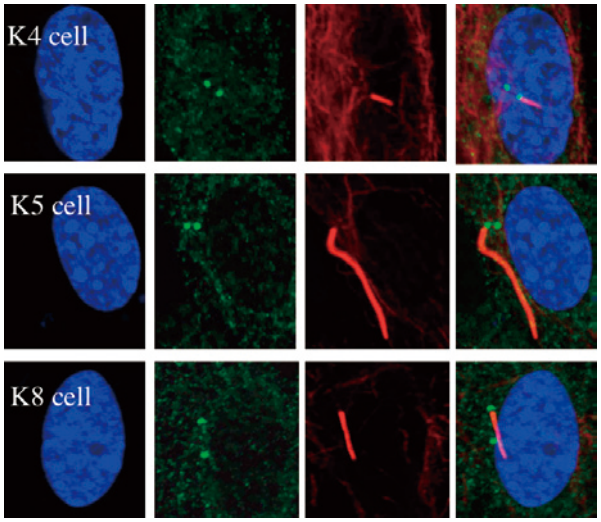

Figure 1. Antibodies stained the minus-end of the primary cilia. Green, candidate protein; red, acetylated tubulin (primary cilia); blue, DNA stained with DAPI.

†: This laboratory was closed on 31 March, 2012.