CDB SEMINAR

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14:45~15:15 A7F Seminar Room

Adenomatous Polyposis Coli (APC) Protein Directly Nucleates Actin Assembly by a Novel Mechanism

Summary

Adenomatous polyposis coli (APC) protein is a large multifunctional molecule whose C-terminal truncation is a hallmark of most colorectal cancers. APC functions not only in canonical Wnt signaling, but also in coordinating microtubule and actin cytoskeletons to promote cell polarization and motility. APC binds to microtubules directly through its C-terminal basic domain (APC-Basic) and indirectly through association with EB1. On the other hand, APC has been reported to interact with molecules involved in actin organization; however, direct involvement has not been shown. In this talk, we will report that APC-Basic by itself nucleates actin filaments. APC nucleates linear, unbranched actin filaments that grow at their barbed ends. A series of biochemical data will be shown that define APC as an actin nucleator and that suggest a mechanism of action distinct from the two conventional actin nucleators, Arp2/3 complex and formins. We will further explore how actin nucleation activity is modulated by APC binding partners EB1 and mDia. Our observations point to a mechanism by which cells might control APC effects on actin assembly to promote cell motility.

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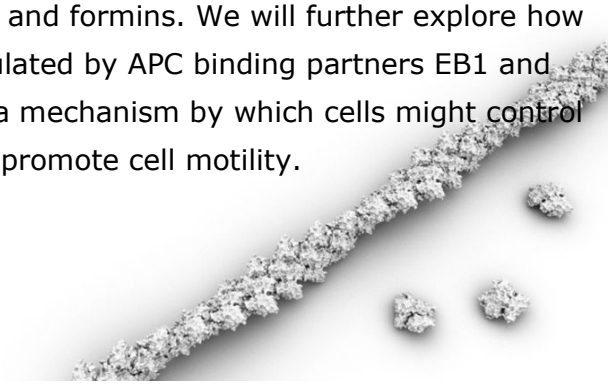

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