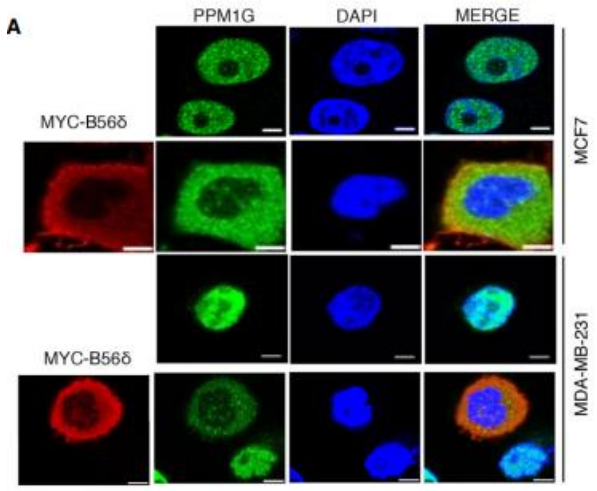
Scientists at CDFD demonstrated new PPM-based holoenzyme complex for cell junction maintenance

Scientists at DBT-Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, demonstrated that B56δ is critical for maintaining cytoplasmic pool of PPM1G, which normally is predominantly a nuclear phosphatase. Team found that the regulatory subunit helps in diversifying the substrate availability for PPM1G phosphatase by regulating its sub-cellular localization. In this case, team identified α-Catenin, an essential component of adherens junction, as a novel substrate for B56δ-PPM1G holoenzyme. The α-Catenin along with β-Catenin and Cadherins at adherens junction is intricately involved in dynamic remodeling of adhesive contacts and thereby controls cell adhesion and migration. Thus, B56δ-PPM1G holoenzyme regulated α-Catenin dephosphorylation is demonstrated to be essential for maintenance of proper cell junctions.



Serine/threonine phosphatases (being about ~26 in number in three different families: PPP, PPM and FCP) act on thousands of substrates in human cell by forming distinct holoenzyme complexes. Interesting fact: only PPP subfamily members such as PP2A, PP1 are known to function as such holoenzymes but none so far from PPM subfamily. Here is a rare example of a PPM family holoenzyme formed by PPM1G and B56δ to regulate cell adherens junctions. Our results suggest that PPM1G and B56δ are interdependent on each other and function cooperatively as a holoenzyme wherein PPM1G act as a catalytic phosphatase unit and B56δ controls appropriate localization of the phosphatase.

Link: https://pubmed.ncbi.nlm.nih.gov/31432583/

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