

摘要

黏著型連接(adherens junction)為人所知的功能為調節細胞與細胞間的黏著。DE-cadherin 和 Echinoid 是果蠅表皮細胞黏著型連接中主要的黏著分子。在此我們利用活體影像的技術追蹤果蠅胚胎表皮細胞中內吞 Echinoid 囊泡的移動,證明了 Echinoid 囊泡會與含有 Rab5 或 Rab11 的胞內體共位且一起移動。令人驚訝的是,這些含有 Echinoid 的胞內體會透過黏著型連接進行具方向性的細胞至細胞間移動。與此一致, Echinoid 囊泡在細胞至細胞間的移動需要黏著型連接中 DE-cadherin 的存在。活體影像進一步顯示 Echinoid 囊泡會沿著與黏著型連接相關的微管(microtubule)進入鄰近的細胞,而此過程需要驅動蛋白(kinesin)的協助。重要的是,含有 DE-cadherin 和 EGFR 的囊泡也有細胞至細胞間移動的現象。總結而言,我們的研究結果揭示了黏著型連接的運輸功能。此外,這種以黏著型連接作為基礎的細胞間運輸提供了一個平台,讓連接蛋白和信號受體可以在相鄰細胞間做交換。



ABSTRACT

Adherens junctions are known for their role in mediating cell-cell adhesion. DE-cadherin and Echinoid are the principle adhesion molecules of adherens junctions in *Drosophila* epithelia. Here, using live imaging to trace the movement of endocytosed Echinoid vesicles in the epithelial cells of *Drosophila* embryos, we demonstrate that Echinoid vesicles co-localize and move with Rab5- or Rab11-positive endosomes. Surprisingly, these Echinoid-containing endosomes undergo directional cell-to-cell movement, through adherens junctions. Consistent with this, cell-to-cell movement of Echinoid vesicles requires the presence of DE-cadherin at adherens junctions. Live imaging further revealed that Echinoid vesicles move along adherens junction-associated microtubules into adjacent cells, a process requiring a kinesin motor. Importantly, DE-cadherin- and EGFR-containing vesicles also exhibit intercellular movement. Together, our results unveil a transport function of adherens junctions. Furthermore, this adherens junctions-based intercellular transport provides a platform for the exchange of junctional proteins and signaling receptors between neighboring cells.