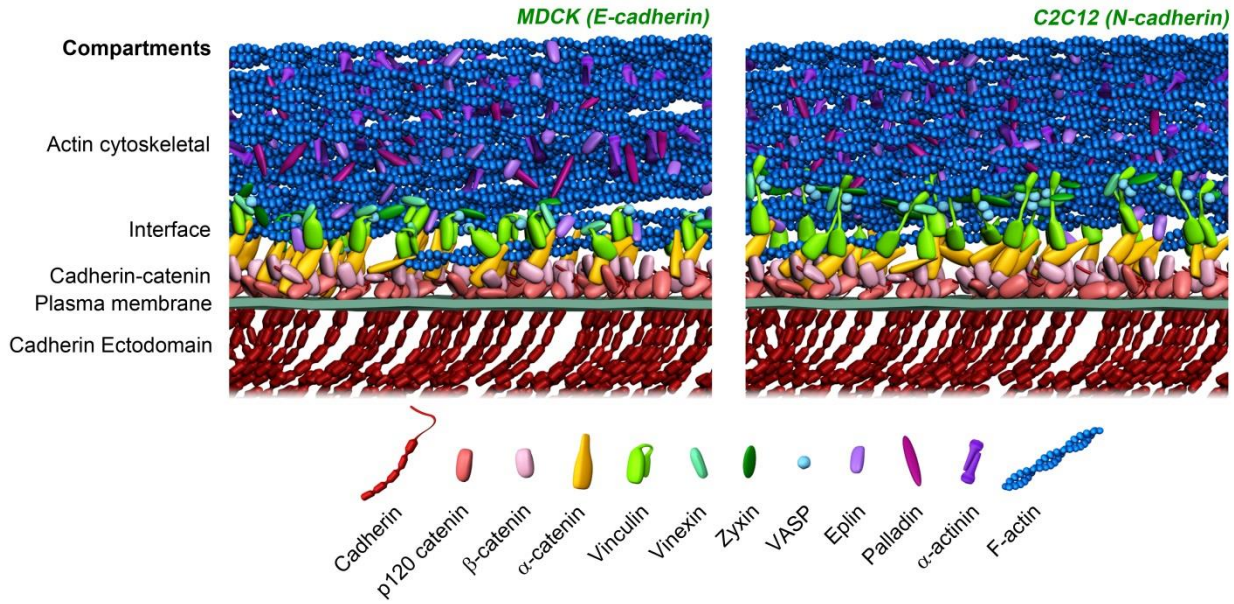
Illuminating the Contacts



Human bodies contain trillions of cells, elaborately organized into tissues and organs. Proper and constant coordination between these cells are necessary in order for the whole to be greater than the sum of the parts. Indeed, individual cells must behave and function as responsible members of the cellular communities to ensure our growth and well-being, and errors in how cells maintain contacts with one another are the hallmarks of devastating diseases, cancer being one of the most dreaded examples. Contacts between cells are maintained by specialized protein 'machines' that enable cells to embrace their neighbors. However, up till now the inner working of such structures has been unknown. The building blocks of these machines are both far too small for light microscopes and far too diverse for electron microscopes.

To better understand the cell-cell contacts, an international research team led by Asst. Prof. Pakorn (Tony) Kanchanawong at NUS Biomedical Engineering and the Mechanobiology Institute made use of super-resolution microscopy to reveal, for the first time, how the cell-cell contacts are organized. This provided the first-ever 'map' or 'blueprint' of how the cell-cell contact building blocks are pieced together into sophisticated nanoscale machines, akin to the 'clutch' in automobile transmission. The visualization of these molecular arrangements, recently published in Nature Cell Biology, serve as a spatial framework, much like an anatomical atlas, for understanding how cell-cell contacts are formed, maintained, regulated, and reinforced.

This study is published in Nature Cell Biology: Bertocchi, et al. Nanoscale architecture of cadherin-based cell adhesions. Nature Cell Biology 2016. doi: **10.1038/ncb3456**
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