1. **No.**

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2. **Title**

   The Role of Phospholipid Translocases in the Membrane Repair in Lung Epithelial Cells.

3. **Period**

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4. **Summary**

   The membrane repair system is fundamental for maintaining the homeostasis in living systems. Phospholipids' distribution has been thought to be dramatically changed during the membrane repair. However, the detailed mechanisms underlying the membrane repair is still elusive. Here we show that phospholipid flippase, an enzyme that translocates phospholipids from the outer to the inner leaflets of the plasma membrane, plays a role in membrane repair. Our results revealed that continuous influx of FM1-43 was observed in phospholipid flippase-deficient cells after introduction of membrane damages, and that this phenotype was probably due to reduced accumulation of membrane repair proteins to damaged sites in the flippase-deficient cells. Moreover, during the course of this project, we identified PIEZO1, a mechanosensitive cation channel that is activated by membrane tension, as a downstream target of phospholipid flippase-dependent phopsholipids' localization. Thus, our results suggest that membrane repair system is regulated by changes in phospholipids' localization, and that our findings may provide clues to establish the therapeutic strategy for a variety of diseases including lung diseases.