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picture: Trafficking of mouse connexin50 hemichannels to and from the plasma membrane of *Xenopus* oocytes. channels are delivered in small transport vesicles and are retrieved in large membrane invaginations. Above a critical density, hemichannels form complete channels in reflective gap junctions, which are retrieved and appear in the plasma membrane as annular gap junctions. See related article by Zampighi, G.A., D.D.F. Loo, M. Kreman, S. Eskandari, and E.M. Wright, in this issue, pp. 507–523.