Opinion

Ephrin and Eph receptors

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Are membrane attached signaling molecules that guide the guide the migration of cell or cellular processes during development such as axon migration and angiogenesis. The term Eph is derived from the cell line (erythopoietein-producing hepato cellular carcinoma) from which the first family membrane, EphA1, was identified. By unified nomenclature rules. Eph is used to denote the tyrosine-kinase members of the family. The term ephrin (Eph receptor interacting protein) is used to denote the ligand that binds to Eph, the receptors. Ephs and ephrins are chemo repulsive agents. Often expressed temporally during development, they provide repulsive cues that cause migrating cells or processes to retreat or redirect their growth\movement.

For example, developing brain axons express type B aprons while surrounding cells express type B Ephrins guide axons away from local connections and results in a complex neural network.

Nearly all ligands and receptors are expressed in developing and adult neural tissue.Ephrins(Ephligands) are divided into two groups type A ephrins are GPI(glycosylphosphosphatidyllinositol) linked molecules, which are not belived to transuce a signal into the expressing cell. Type B ephrins are trans membrane glycol proteins,which can transuce a signal upon binding to the appropriate type B Eph. Soluble ephrins may bind to Eohs, but only membrane-bound ephrins are able to initiate Eph autophosphorylation and activation.

In general type A ephrins bind to type A Ephs and type B ephrins bind to type B Ephs and type B ephrin all ephrins share a conserved extracellular sequence with 4 invariant cysteines. Type B aprons share a conserved cytoplasmic domain (absent in type A apron). Overall, type A ephrins show 23 squence identity and type B ephrins show sequence indenities of 33 in extracellular and 44% in cytoplasmic domains.

Ephs(Ephs receptors) are also divided into two groups on the basis of extracellular structures and ligand specificties. All Ephs contain a cyto plasmic tyrosine kinase domain, cysteine rich domain of 19 conserved cysteines, two fibronectin type III domains, and Ig-like N-terminal domain. Most type A Ephs bind only type A ephrin members (except EphA4 which binds to Ephrin-B1). Type B Ephs bind exclusively to type B ephrins.

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Conflicts of interest

The author declares that there is no conflicts of interest.