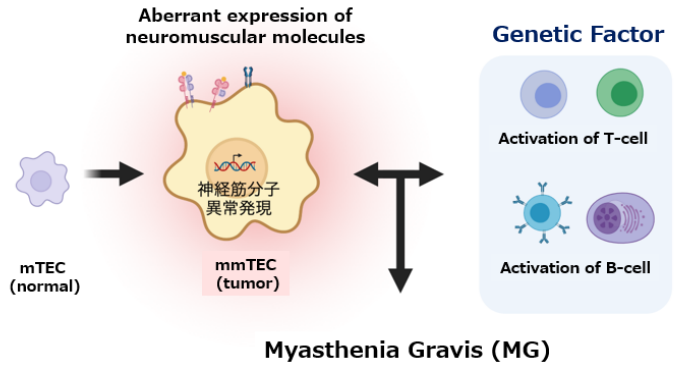
How myasthenia gravis develops in thymoma patients?

Keywords: myasthenia gravis, thymoma, omics analysis

Although Myasthenia gravis (MG) frequently develops in thymoma patients, the etiologic factors for MG are not well understood. By constructing a comprehensive atlas of thymoma using bulk and single-cell RNA-sequencing, Naganari Ohkura (IFReC/Graduate School of Medicine, Osaka University, Shimon Sakaguchi (Experimental Immunology, IFReC) identified ectopic expression of neuromuscular molecules in MG-type thymoma.



Mechanism of Myasthenia Gravis with thymoma

These molecules are found within a distinct subpopulation of medullary thymic epithelial cells (mTECs), which they name neuromuscular mTECs (nmTECs). MG-thymoma also exhibits microenvironments dedicated to autoantibody production, including ectopic germinal center formation, T follicular helper cell accumulation, and type 2 conventional dendritic cell migration. Cell–cell interaction analysis also predicts the interaction between nmTECs and T/B cells via CXCL12-CXCR4. The enrichment of nmTECs presenting neuromuscular molecules within MG-thymoma is further confirmed immunohistochemically and by cellular composition estimation from the MG-thymoma transcriptome. Altogether, this study suggests that nmTECs have a significant function in MG pathogenesis via ectopic expression of neuromuscular molecules.

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