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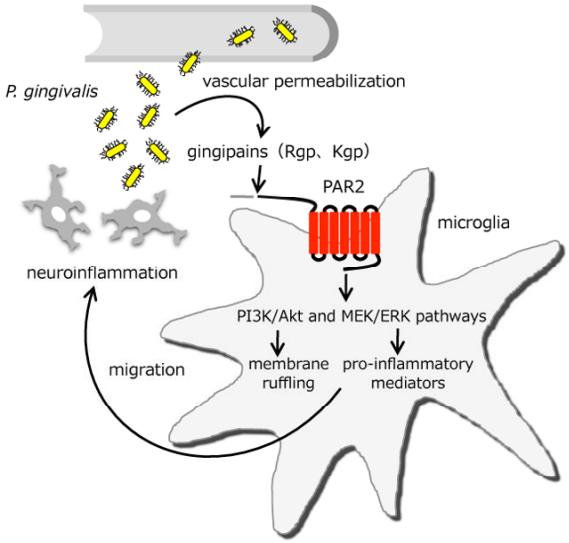
PRESS RELEASE (2017/010/18)

Gingipains secreted from *Porphorymonas gingivalis* induce migration and inflammatory response of microglia

～ A gating mechanism of microglial responses to infected bacteria ～

Despite a clear correlation between periodontitis and cognitive decline in Alzheimer's disease, the precise mechanism underlying the relationship remains unclear. The periodontal pathogen *Porphyromonas gingivalis* produces a unique class of cysteine proteinases termed gingipains that comprises Arg-gingipain (Rgp) and Lys-gingipain (Kgp). Rgp and Kgp are important in the bacterial mediated host cell responses and the subsequent intracellular signaling in infected cells. In the present study, the research group led by Prof. Hiroshi Nakanishi attempted to clarify the potential effects of Rgp and Kgp on the cellular activation of brain-resident microglia. The study provides the first evidence that Rgp and Kgp cooperatively contribute to the *P. gingivalis*-induced cell migration and expression of proinflammatory mediators through the activation of protease-activated receptor 2. The subsequent activation of phosphoinositide 3-kinase/Akt and mitogen-activated protein kinase/extracellular signal-regulated kinase (ERK) kinase/ERK pathways contribute to cell migration and inflammatory response of microglia.

The research achievement was published online in Scientific Reports on September 18, 2017.



A schematic illustration of gingipains(Rgp and Kgp)-induced migration and inflammatory response of microglia through activation of protease-activated receptor 2 (PAR2).

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