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### COVER:

#### Discovery in Japan

##### Autophagy fights against bacteria

Autophagy is an intracellular bulk degradation/recycling system mediated by the unique membrane compartment, autophagosome (1). Autophagy is originally known as a cellular catabolic process by which cells digest their own components. However, Yoshimori and his colleagues found that beyond its definition of “self-eating” autophagy can efficiently sequester and kill group A *streptococcus* (GAS) invading the host cytoplasm (2). Autophagosomes trapping the bacteria cluster are unusually large and their formation requires small GTPase Rab7 (3). Since Rab7 is unnecessary in the canonical metabolic autophagosome formation, it is likely that the variant autophagy specialized for defense against pathogen has evolved by equipping the additional molecule.

After this first report on autophagy against pathogen (so-called xenophagy), so many works have been published about the battles between autophagy and diverse pathogens including not only bacteria but also viruses and protozoa.

Magenta: DNA stain representing the host nucleus and invading GAS, Green: autophagosome marker GFP-LC3, Orange: microtubules in the cytoplasm.

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