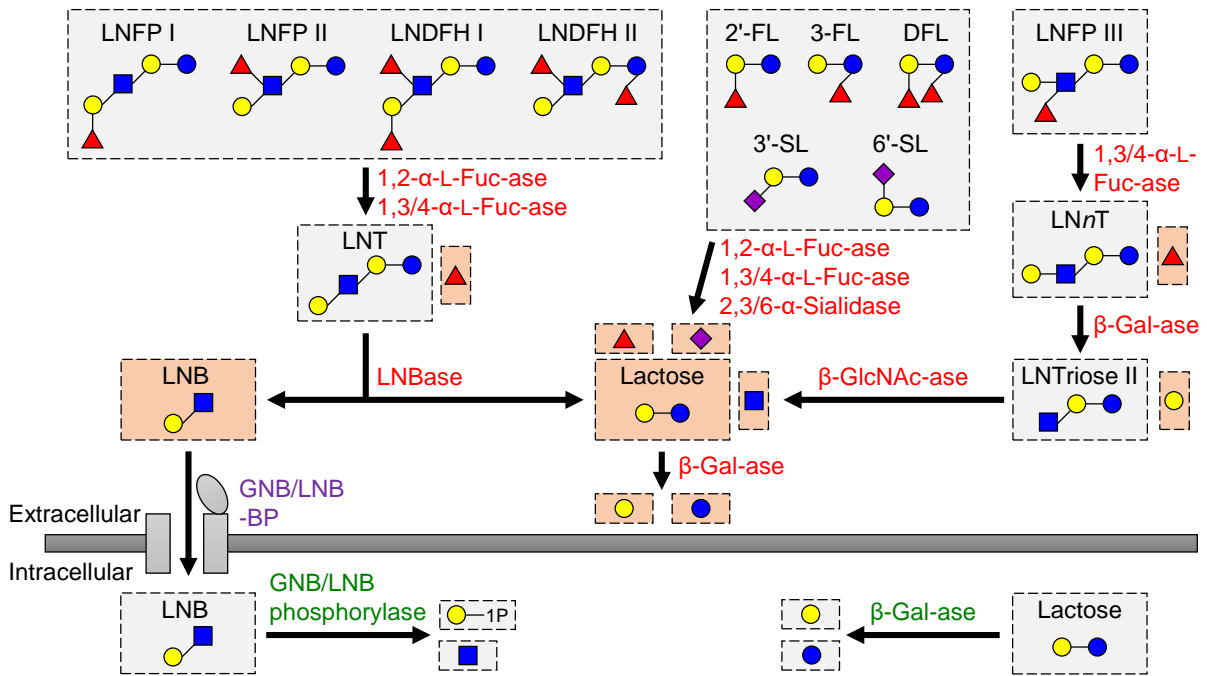


**(A) *B. bifidum* (extracellular digestion type)**



**(B) *B. infantis* (intracellular digestion type)**

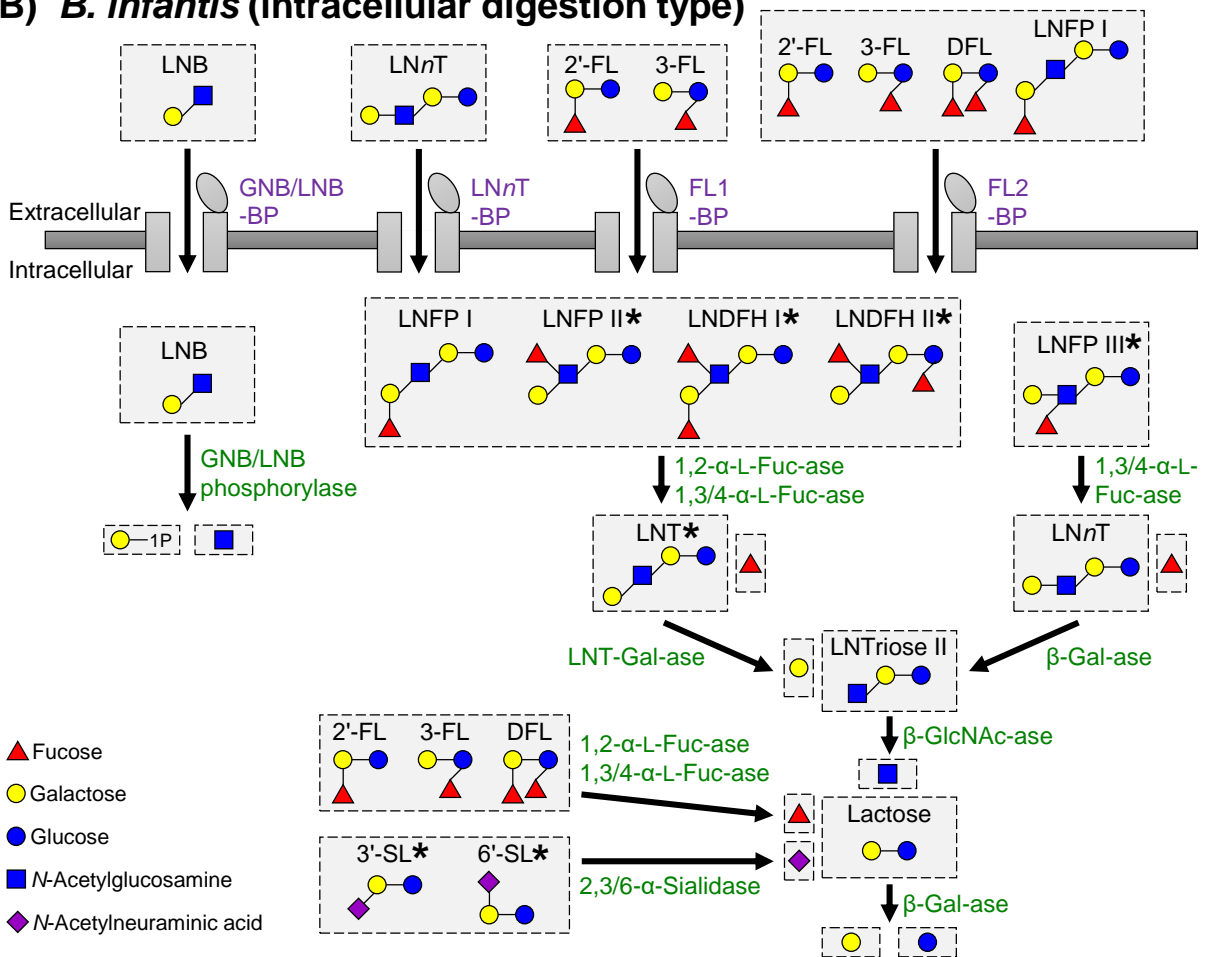


Fig. 12. HMO utilization pathways in *B. bifidum* (A) and *B. longum* subsp. *infantis* (B). (A) The mono- and disaccharides highlighted in orange are extracellularly produced by *B. bifidum* and are partly shared among gut microbes, especially within bifidobacteria (ref. [108]). (B) *B. longum* subsp. *infantis* has been reported to import almost all HMOs, but the transporters responsible for the uptake of several HMOs, indicated by asterisks, have not been identified. (A and B) The transporters for monosaccharides and lactose are not shown. This figure is adapted from ref. [105] with modifications (Licensed under CC BY; <http://creativecommons.org/licenses/by/4.0/>).