Gut microbiomes are most malleable in the first 2 years of life. Can infant probiotics improve long-term health?

[Children] acquire gut microbiome species from their mothers and others in the community during early life. This stands in contrast to an adult's gut microbiome, which is stable and resists change largely because the available space and food is already used by established microbes.

…

Thus, it makes sense that a probiotic has a better chance of persisting in the infant gut, where it faces less competition, and therefore is more likely to have food it can consume and a location where it can grow. A probiotic serves as just one more source of exposure to new bacteria for the infant.

…

[One] particular strain of B. infantis, provided as a probiotic to breastfed infants, dramatically colonized the infant gut microbiome during and after supplementation, and beneficially remodeled the microbial, biochemical, and immunological environment in the infant gut. Many infants around the world never acquire B. infantis, but the combination of breastfeeding and probiotic supplementation with this bacterium seems to lead to a nourishing and protective gut environment.
Our findings also support the hypothesis that the ineffectiveness of some probiotics in adults is due in part to the fact that they are introducing a new species to an established community with few ecological niches still open.

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