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Our dietary habits influences the development of the microbiota, which imprints the development of intestinal lymphoid tissues and mucosal immune responses. We currently investigated the impact of dietary fibers, e.g. cellulose, which is a prominent and ubiquitous fiber of our food. So far, it was believed that cellulose is indigestible and primarily serves as bulk material for humans.

A careful look into the enzymatic equipment of our microbiota revealed that there are many bacterial species that have the ability to cleave cellulose and may utilize cellulose as substrate. As a consequence, lack of any dietary fibers result in an impaired maturation of the microbiota with increased susceptibility to inflammation. Interestingly, cellulose as sole fiber is a able to enhance maturation of the microbiota and to dampen the susceptibility for inflammatory pathologies.