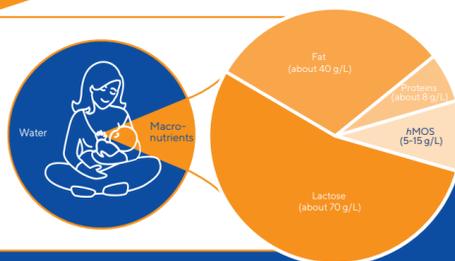


Human milk Oligosaccharides (hMOS)

hMOS are the third most abundant component of human milk, and the diversity of hMOS is enormous. Both amount and diversity can vary between and within mothers. The various hMOS have different functionalities.



Examples of hMOS

2'-Fucosyllactose (2'-FL)
3'-Fucosyllactose (3'-FL)
Lacto-N-tetraose (LNT)
3'-Sialyllactose (3'-SL)
6'-Sialyllactose (6'-SL)



hMOS are very complex: in amount, diversity and functionality



Amount

are complex carbohydrates

hMOS are the third most abundant component of human milk, after lactose and fat.^{1,2}

The highest concentration of hMOS is reported in colostrum, with levels up to 20 g/L, while mature human milk has levels ranging from 5 to 15 g/L.^{3,4}

The amount and diversity of hMOS varies:^{4,5}

- between women
- between stages of lactation
- geographically



The percentage of women producing the hMOS 2'-FL varies globally between 65 - 98 %⁶

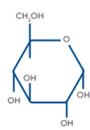
hMOS are formed by linking between three and ten monosaccharides.

Differences in the size and linkages of monosaccharides result in unique oligosaccharides structures:

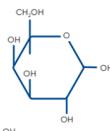
Diversity

Building blocks:

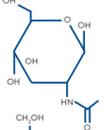
● Glucose



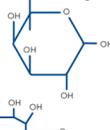
● Galactose



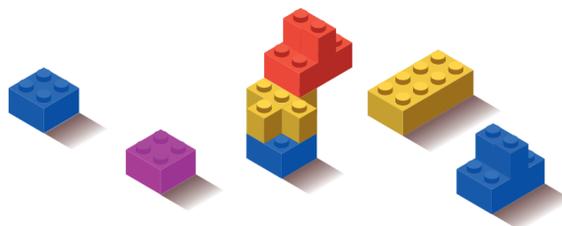
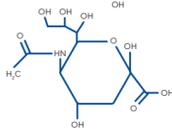
■ N-acetyl-glucosamine



▲ Fucose



◆ Sialic acid

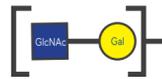


Lactose core



All hMOS contain a lactose core

Core structures



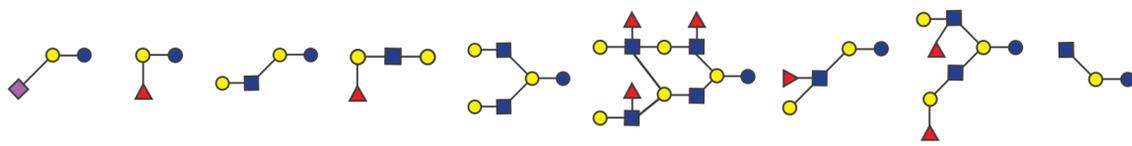
Core structure can vary in size and linkages

Terminal positions



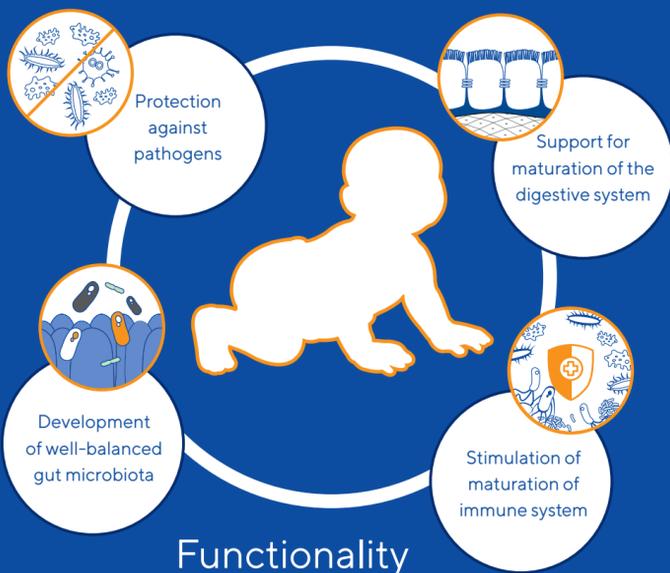
Terminal position determines if a hMO is neutral or acidic

In human milk, more than 1000 structurally different hMOS have been analysed, of which only **200 have been characterised** and described in detail to date.^{4,7}



Various hMOS have different functionalities

The presence of diverse mixture of hMOS affects several mechanisms related to immune and microbiome maturation in the infant's gastrointestinal tract.^{2,4,8,9,10}



References: 1: Smilowitz et al. 2014. 2: Bode & Jantscher-Krenn 2012. 3: Ruhaak & Lebrilla 2012. 4: Thurl et al. 2017. 5: Coppa et al. 1999. 6: McGuire et al. 2017. 7: Donovan & Comstock 2016. 8: Stahl et al. 1994. 9: Zuurveld et al. 2020. 10: Quinn & Hickey 2020.

Disclaimers:

- Ausnutria acknowledges that breastfeeding is the best food for infants aged 0-6 months and supports prolonging breastfeeding up to 24 months (age 2).
- For health care professionals only.