Several studies have shown that growth failure of preterm infants affects later life health and compromises brain development [1,2]. Therefore avoiding growth failure is a central challenge in preterm nutrition [1-3].

PREVENTING GROWTH FAILURE
Preterm infants have increased nutrient requirements to achieve the growth velocity of a child growing in its mother’s womb [4,5]. These requirements are much higher than those of a term born peer [4-6].

Medical associations such as the European Society for Gastroenterology, Hepatology, and Nutrition (ESPGHAN)[6] and American Academy of Pediatrics [AAP, 7] as well as neonatal experts [8] address these requirements by giving specific recommendations for premature infants born weighing less than 1000 g, less than 1500 g and less than 1800 g.

All these associations acknowledge that protein is a key nutrient in avoiding growth failure as long as enough energy is provided [6-8].

FEEDING CHALLENGES
Avoiding growth failure by meeting the high energy and protein needs is challenging: enteral feeding commonly takes place through naso-gastric tubes because of feeding difficulties [4]. The feeding needs to be highly concentrated because of small stomach volumes that limit intake, but also are well tolerated [4-6].

PHYSIOLOGY
An immature gut physiology affects growth. Healthy growth can only be achieved with an intact healthy gut that is capable of digesting and absorbing the provided nutrients, and a metabolism prepared to use nutrients effectively [4].

The colonic microbiota, compromised in preterm infants because of prophylactic use of antibiotics and pathogens in the hospital environment, play an important role in maintaining a healthy gastrointestinal environment for digestion of nutrients [9,10].
Intestinal microbiota also plays a vital role in the immune system [9], helping to reduce the risk of infection and necrotising enterocolitis, which compromise survival and/or growth [10]. As such, providing appropriate nutrition to meet the high nutrient and energy requirements and support the colonisation of healthy intestinal microbiota is essential to improve gut and immune health, which provides the platform for adequate growth. Together, these factors create an environment for long term health.

Adequate growth is a major challenge for preterm infants. It is affected by an immature gut and metabolic physiology and as a consequence inadequate intake, digestion, uptake and usage of the nutrients. Moreover suboptimal intestinal microbiota and an immature immune system may play a role in the risk of infection and necrotising enterocolitis, further compromising growth. Together the factors/processes leading to growth failure also impact/compromise brain development.

**References**