



Gut-brain axis: study on multiple sclerosis animal model

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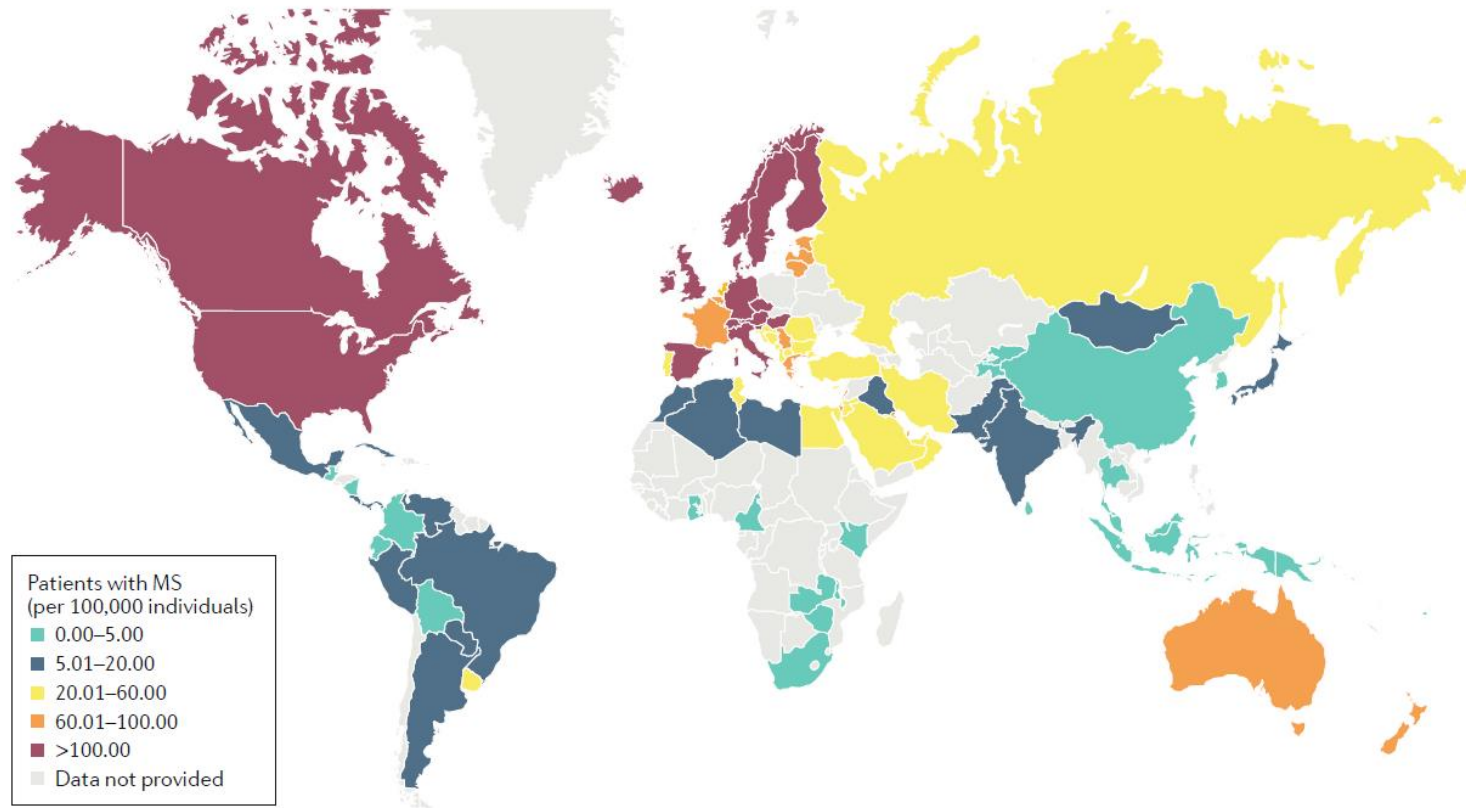
106 CONGRESSO NAZIONALE SIF

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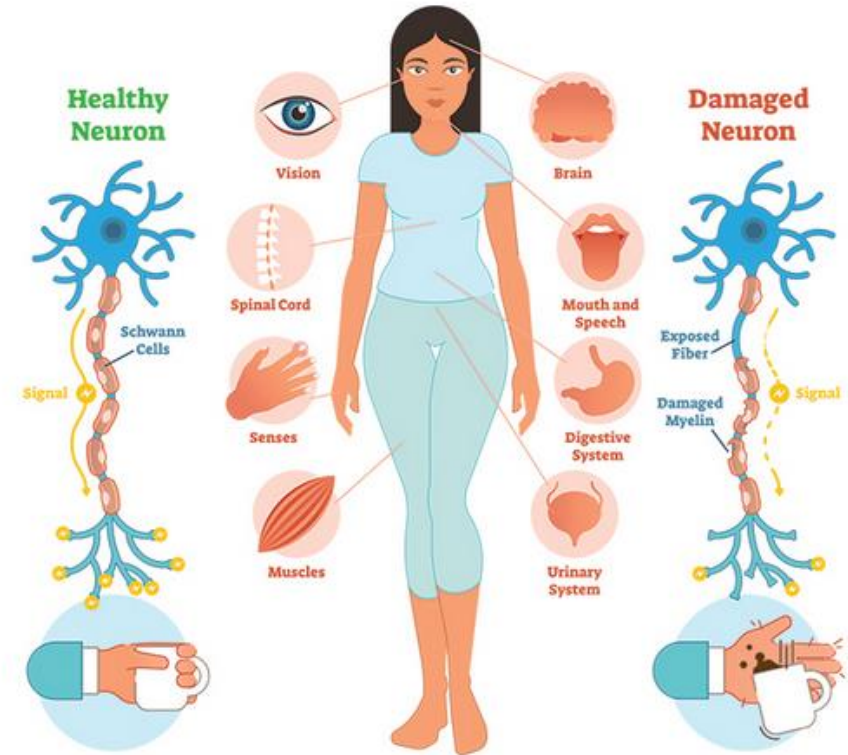
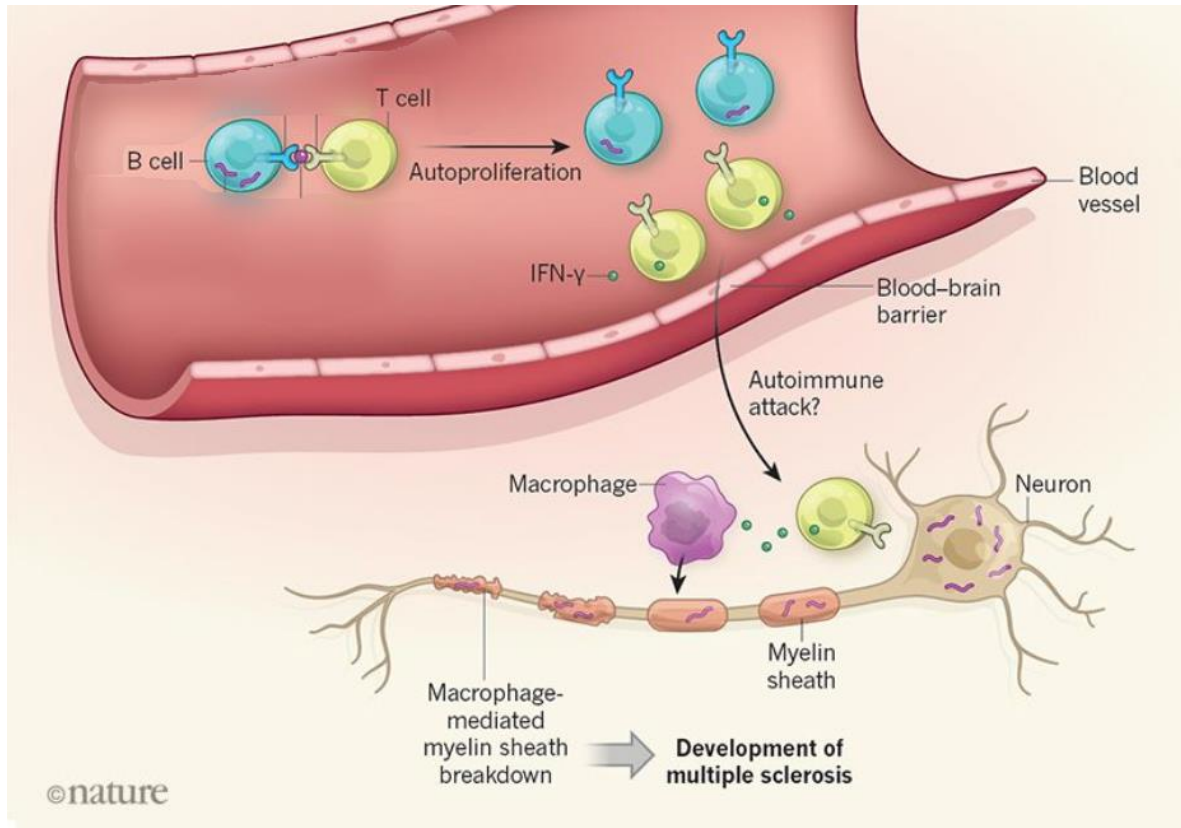


Multiple Sclerosis

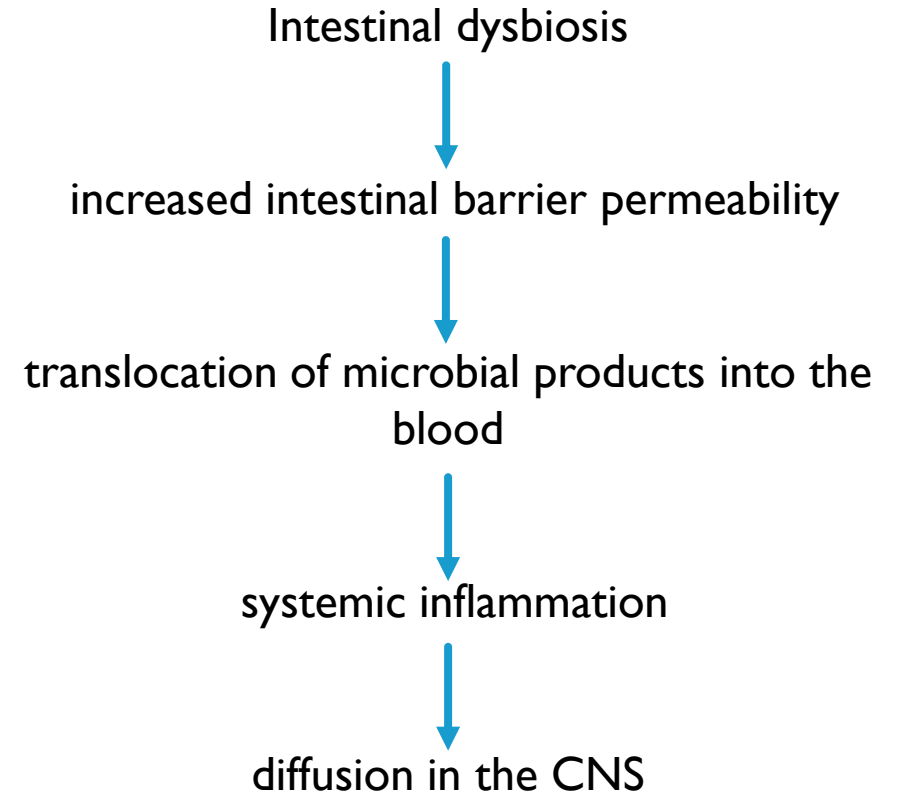
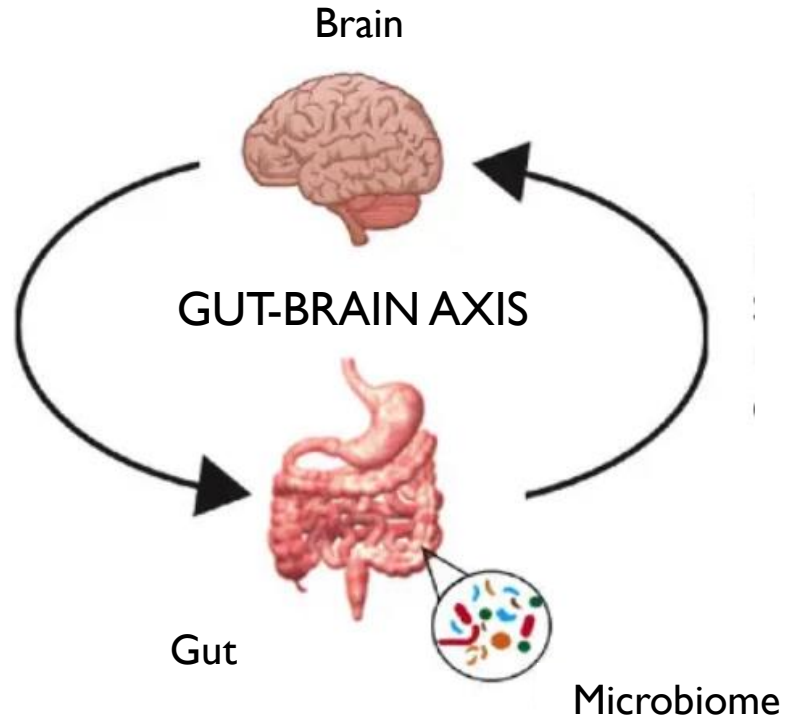
Multiple sclerosis is a chronic inflammatory demyelinating disease of the central nervous system.



Etiopathogenesis



Gut-Brain axis in MS



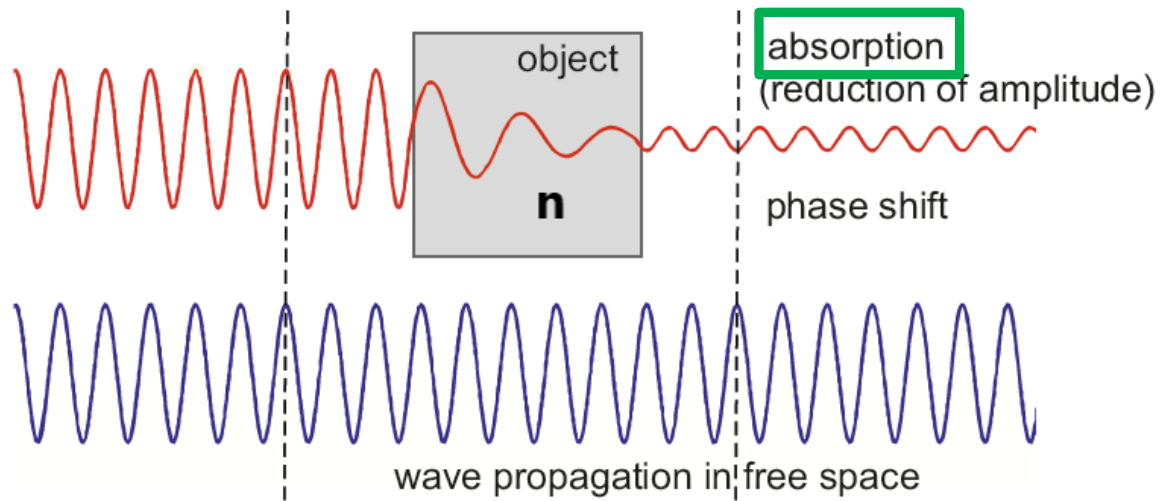
Preclinical studies and animal model: Experimental Autoimmune Encephalomyelitis EAE

The animal model has many advantages, including the possibility of carrying out preclinical studies



We studied the gut-brain axis in the EAE using **phase contrast tomography** technique

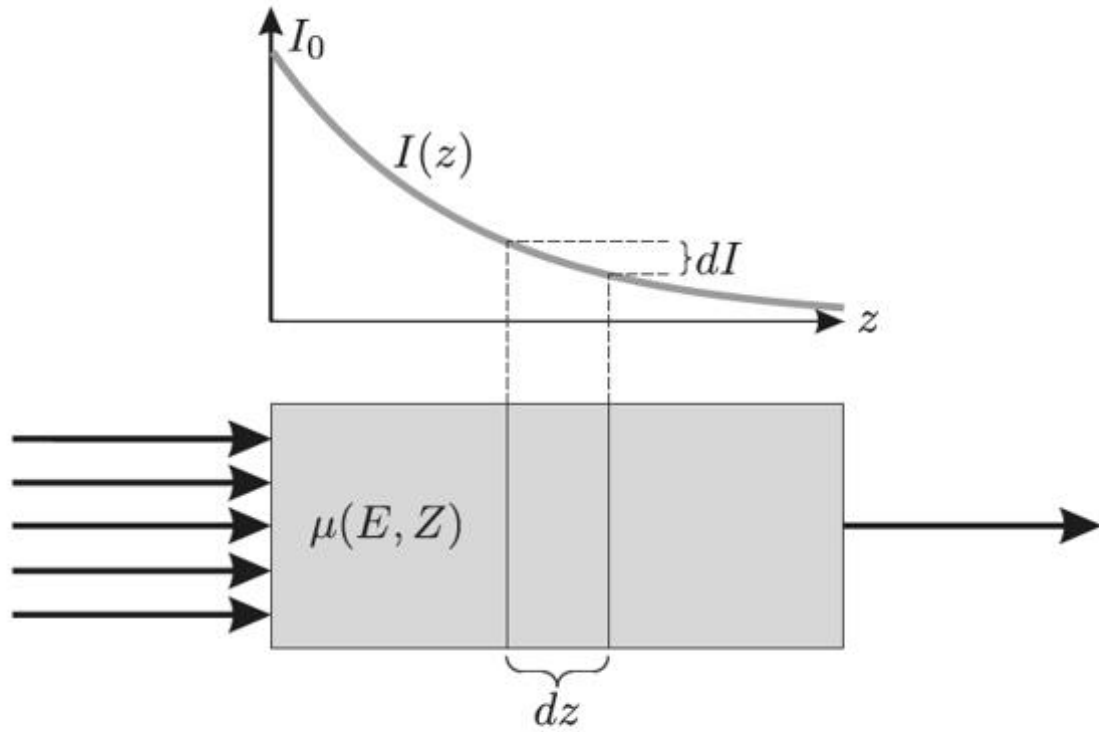
Radiation-matter interaction



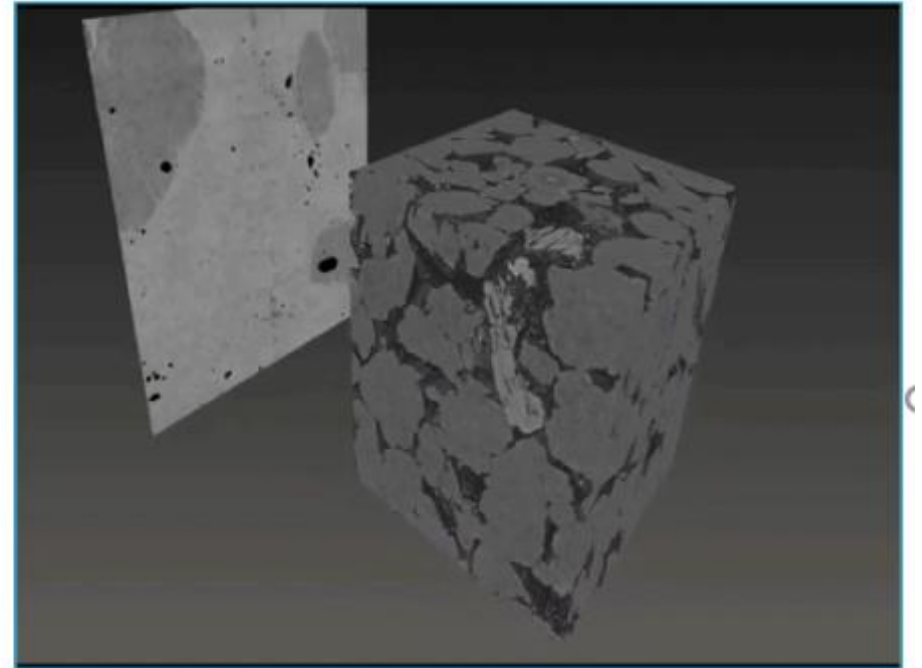
$$n(\omega) = 1 - \delta(\omega) - i\beta(\omega)$$

Absorption term
 $\propto \mu$

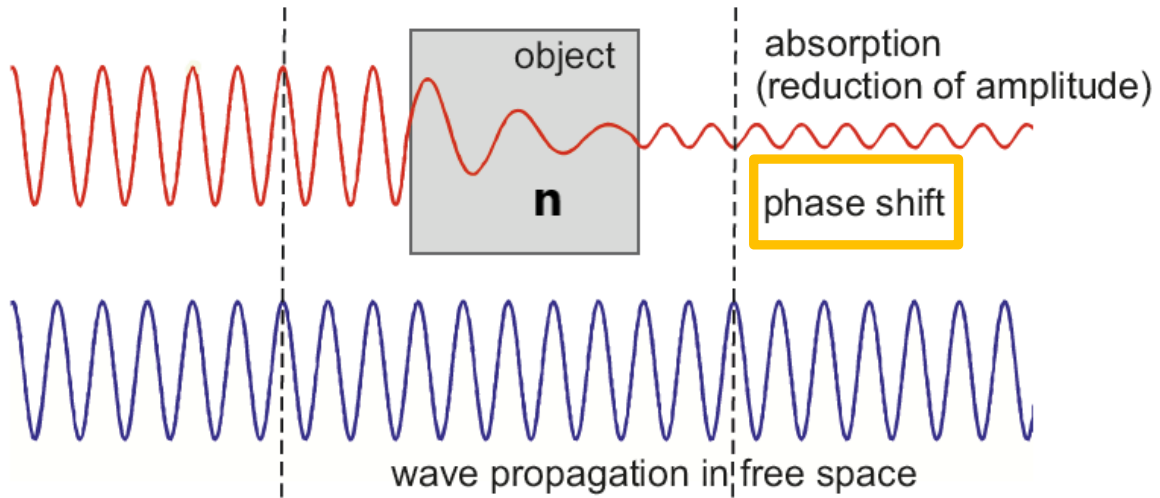
Conventional tomography



$$I(z) = I_0 \exp(-\mu z)$$



Phase contrast



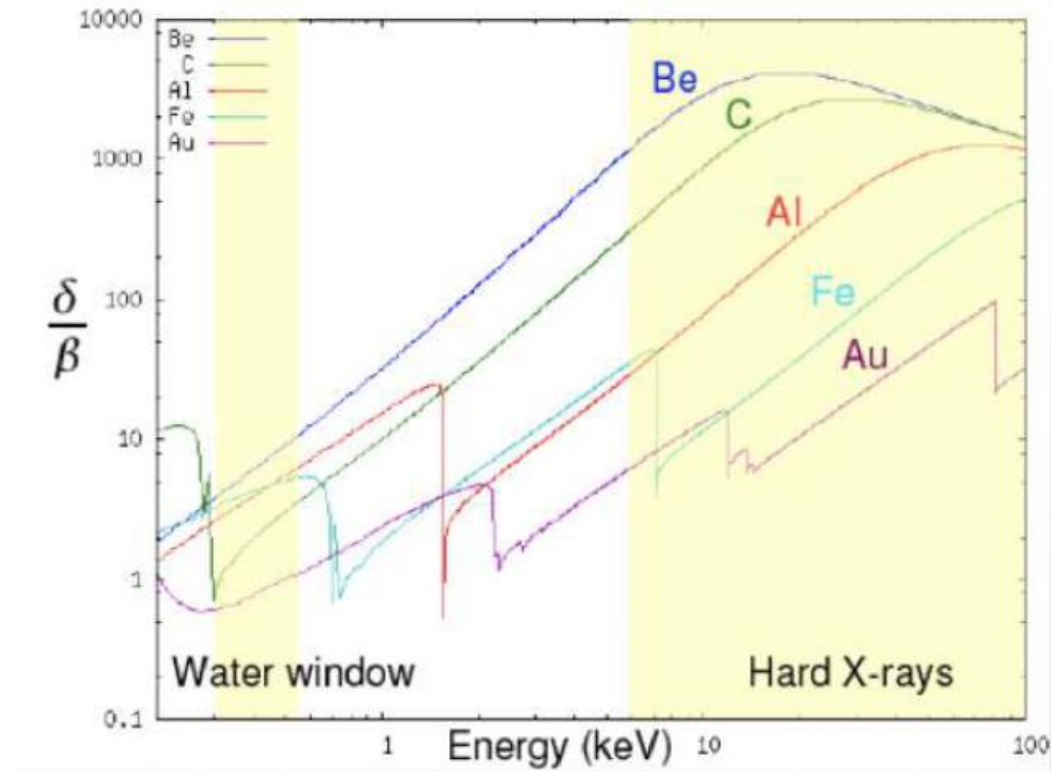
$$n(\omega) = 1 - \delta(\omega) - i\beta(\omega)$$

↓

Phase Term
 $\propto \rho$



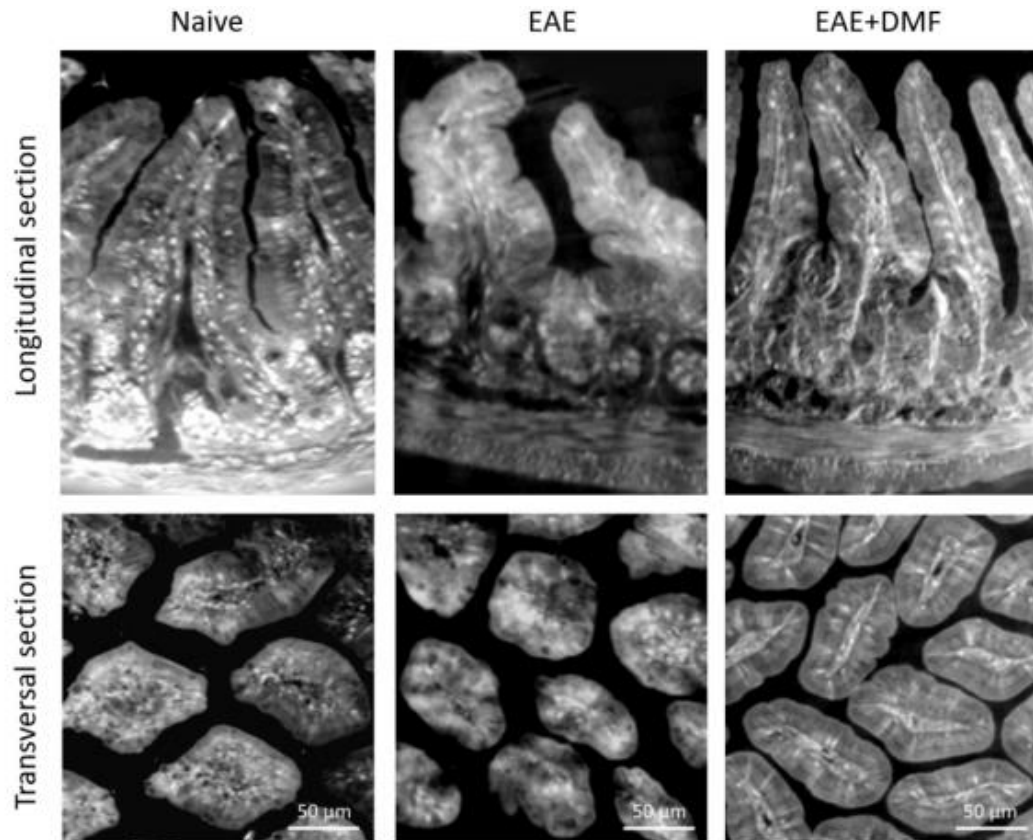
Phase contrast



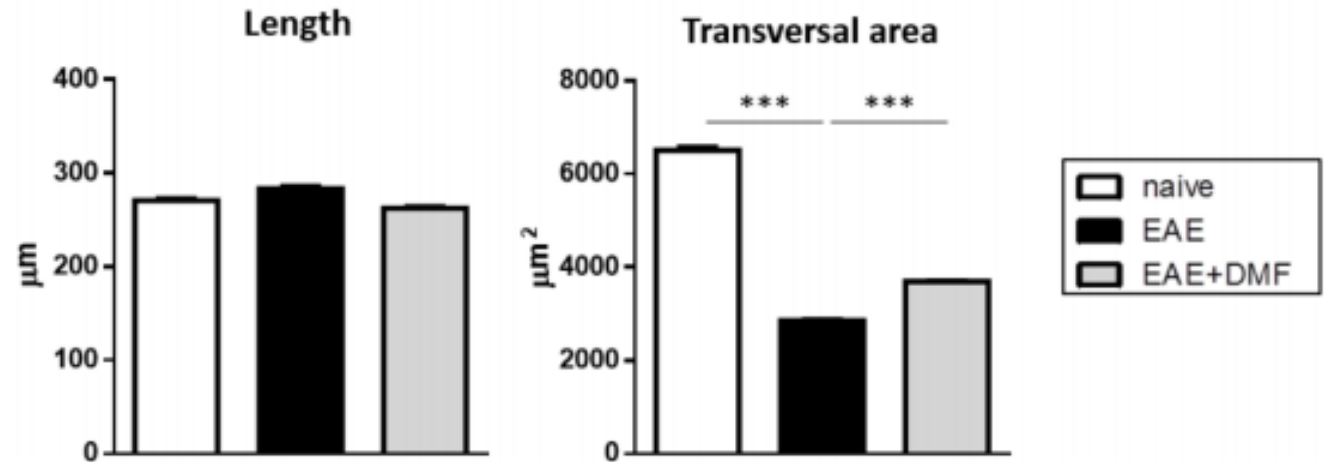
At high energies and for small Z's the phase contrast gain is ≈ 1000



Quantitative analysis



Quantification of villi parameters



Parodi et al. - *submitted*