GENETICS

HOW DOES THE SOMA TO GERMLINE TRANSFER WORK?

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I never had problems to understand environmental induced sperm methylation as spermatozoa of animals are produced continuously by meiotic division. But I learned that in humans all ova are produced before birth, so how could these ever be influenced by an environmental exposure? It seems that the dogma of prefabricated eggs is wrong as described already in 2012.

> Rare mitotically active cells have a gene expression profile that is consistent with primitive germ cells. Once established in vitro, these cells can be expanded for months and can spontaneously generate 35- to 50-µm oocytes

So there is a lifelong chance that environmental exposures both in fathers and mothers can be transmitted to the offspring "fat eggs, fat offspring" – there is no Weismann Barrier. (This remains also an important question as somatic gegen therapy could accidentally introduced germline changes – at least in theory).

But how does any soma to germline transfer work? A new paper examined this in more detail. They found that the negative regulator of sperm activation in C elegans, SWM-1, is produced in body wall muscle, then secreted into the body cavity. Whenever it enters the gonad it finds it target TRY-5, a spermiogenesis activator, that influences sperm success.

So to the more conventional soma to germline theories of persistent methylation changes or RNA fragments (as described in a recent review) there maybe more possibilities like microbiome transfer.