ID de Contribution: **354** Type: **Contribution orale**

Evolutionary Emergence of Primitive Gut of First Metazoa Triggered by Environmental Mechano-Biochemical Marine Stimulation

mercredi 5 juillet 2023 15:45 (12 minutes)

The evolutionary emergence of the primitive gut in Metazoa is one of the decisive events that conditioned the major evolutionary transition leading to the origin of animals. It is thought to have been intimately associated with endomesoderm specification in multicellular tissue and its invagination (i.e. gastrulation). However, the biochemical signals underlying endomesoderm specification and gastrulation evolutionary emergence remain unknown. Here we find that hydrodynamic mechanical strains, reminiscent of soft marine flow, trigger active tissue invagination/gastrulation or curvature reversal via a Myo-II-dependent mechanotransductive process in the metazoan Nematostella vectensis (Cnidaria) and in the multi-cellular choanoflagellate Choanoeca flexa considered as the closest living relative to metazoans. We also show that, like in bilaterian animals, gastrulation in the cnidarian Nematostella vectensis induces biochemical specification of the endomesoderm through mechanical activation of the ⍁⍁catenin pathway via the phosphorylation of Y654-⍁cat. The common ancestor of these distinct organisms dates back to at least 700 million years ago.

Affiliation de l'auteur principal

Institut Curie UMR168

Auteurs principaux: MERLE, Tatiana; Dr NGUYEN, ngoc minh

Co-auteurs: JHA, Aditya; BRUNET, Anne-Christine; BATTISTELLA, Aude; LAND, Emelie Britt Linnea; FARGE, Emmanuel; ROTTINGER, Eric; BRODERS-BONDON, Florence; SARRON, Florian; GENISSON, Jean-Luc

Orateur: Dr NGUYEN, ngoc minh

Classification de Session: Mini-colloques: MC04 Mécanique et le vivant

Classification de thématique: MC4 Mécanique et vivant