pathway inhibition, the MCCs spend more time wandering between the inner and outer layer, and hesitate among several vertexes. We propose a model in which the SCF/c-KIT pathway is required to polarize the motility of intercalating MCCs towards the outer layer and to anchor intercalating MCCs to outer layer vertexes.

doi:10.1016/j.mod.2017.04.210

PS3.4
A chromosome four-associated nuclear body in Drosophila melanogaster
Farzanah Akhbar[b], Amanda Yunn Ee Ng[a], Jun Wei Pek[a]

[a]*Temasek Life Sciences Laboratory, Singapore*
[b]*Temasek Polytechnic, Singapore*

The cell nucleus is a highly organized environment containing various nuclear bodies or organelles that are involved in the metabolism of RNA. A few nuclear structures are known to associate with specific chromosomal loci to facilitate processing of RNA from these loci. Notably, the nucleolus associates with the nucleolar organizing region (NOR), which contains tandem repeats of rDNA; while the histone locus body (HLB) associates with the tandem repeats of histone gene loci. Here we describe the identification of a novel nuclear body (we termed satellite body) that associates with the chromosome four in Drosophila melanogaster. A double-stranded RNA binding protein Disco-interacting protein 1 (DIP1) forms nuclear bodies in transcriptionally active cells, but not in oocyte nuclei, spermatids, and cells during mitosis. DIP1 localizes to satellite bodies that decorate the fourth chromosomes in both germline and somatic cells. The Drosophila chromosome four contains a very high density of INE-1 transposable element sequences in the introns, which are processed into stable intronic sequence RNAs (sisRNAs). Mutation and overexpression of DIP1 show that DIP1 negatively regulates the abundance of INE-1 sisRNAs. Our results show that satellite bodies localize to chromosome four, and suggest that they function to regulate the levels of sisRNAs from intronic-encoded INE-1 elements, which are present in high concentration in chromosome four in Drosophila. Our study provides insights to the compartmentalization of double-stranded RNA or sisRNA metabolism machineries in the nucleus.

doi:10.1016/j.mod.2017.04.211

PS3.5
Cellular dynamics of somite formation
Agnieszka Piatkowska, Claudio Stern

UCL, London, United Kingdom

Cellular dynamics of somitogenesis.

Somites, which contribute to vertebrae, skeletal muscles and dermis, form every 90min in rostral-to-caudal order, from mesenchymal pre-somitic mesoderm (PSM). Each newly formed somite is a rosette of epithelial cells surrounding a central lumen, which buds off the anterior tip of the PSM. At the tail end of the PSM, cells are added from the primitive streak. Therefore the PSM has temporal and spatial organisation.

We know little about how somites segment in cellular detail. At what level of the PSM do cells start the epithelialisation process? Does the number of cells doing this correspond to those that will form one somite? SEM and confocal imaging was used to study the dynamics of this process. They reveal that epithelialisation starts dorsally, initially in small clusters. The distribution of markers of cell polarity shows that cells polarise later, shortly before each somite separates from PSM. Apical enrichment of N-cadherin occurs about the same time.

It was previously proposed that the medial PSM acts as an "organizer" of segmentation (Freitas et al., Development 128:5139, 2001). To test this, we performed a series of quail/chick transplantation experiments, in which various lengths and positions of the PSM were grafted into a host, with or without rotation. Generally, grafts of either medial or lateral PSM segment independently of the host pattern. However, grafting a short piece of posterior most PSM in the reverse orientation generates somites that remain separate but have rostral-caudal polarity similar to the host, suggesting that segmentation and rostro-caudal polarity of the somites are governed independently.

doi:10.1016/j.mod.2017.04.212

PS3.6
Role of MNS1 in cilia motility during zebrafish development
Eduardo Pulgar, Miguel Concha

Laboratory of Experimental Ontogeny - LEO, ICBM, Faculty of Medicine, University of Chile, Chile

Motile cilia are cellular organelles specialized in translate chemical signals into mechanical stimuli. They work like engines for locomotion and mobilize fluids into tubes or cavities. In vertebrates, defects in these organelles cause severe disorders during embryonic development and adult life. Despite recent advance, our knowledge of cilia motility is still confined to observations of flagella of unicellular models or spermatozoa mainly due to difficulty of observe these structures in animal models. Zebrafish transparent embryos offer the opportunity to combine genetics manipulations and imaging of cilia motility. Here we show that MNS1 (Meiosis-specific Nuclear Structural protein 1), a protein originally described as a specific structural component of spermatogenesis, is expressed exclusively in all motile ciliated organ and its abrogation elicit embryological disorders and cilia defects in zebrafish. These results provide novel insights in the cilia motility biology.

doi:10.1016/j.mod.2017.04.213

PS3.7
Dual mechanisms ensure a gradient of cortical PAR-1 for C. elegans embryonic polarization
Ravikrishna Ramanujam[a], Ziyin Han[a,b], Fumio Motegi[a,b,c]

[a]*Temasek Life Sciences Laboratory, Singapore*
[b]*National University of Singapore, Singapore*
[c]*Mechanobiology Institute, National University of Singapore, Singapore*

Protein concentration gradients encode spatial information within and across cells. An opposing gradient of two kinases, atypical protein kinase C (aPKC) and PAR-1, guide the asymmetric organization of diverse cellular structures, but the mechanism underlying their spatial patterning remains poorly understood. Here we show in *Caenorhabditis elegans* zygotes that the PAR-1 gradient arises as a consequence of dual mechanisms, by which PAR-1 is stabilized at the cortex and is protected from cortical exclusion by aPKC. PAR-1's