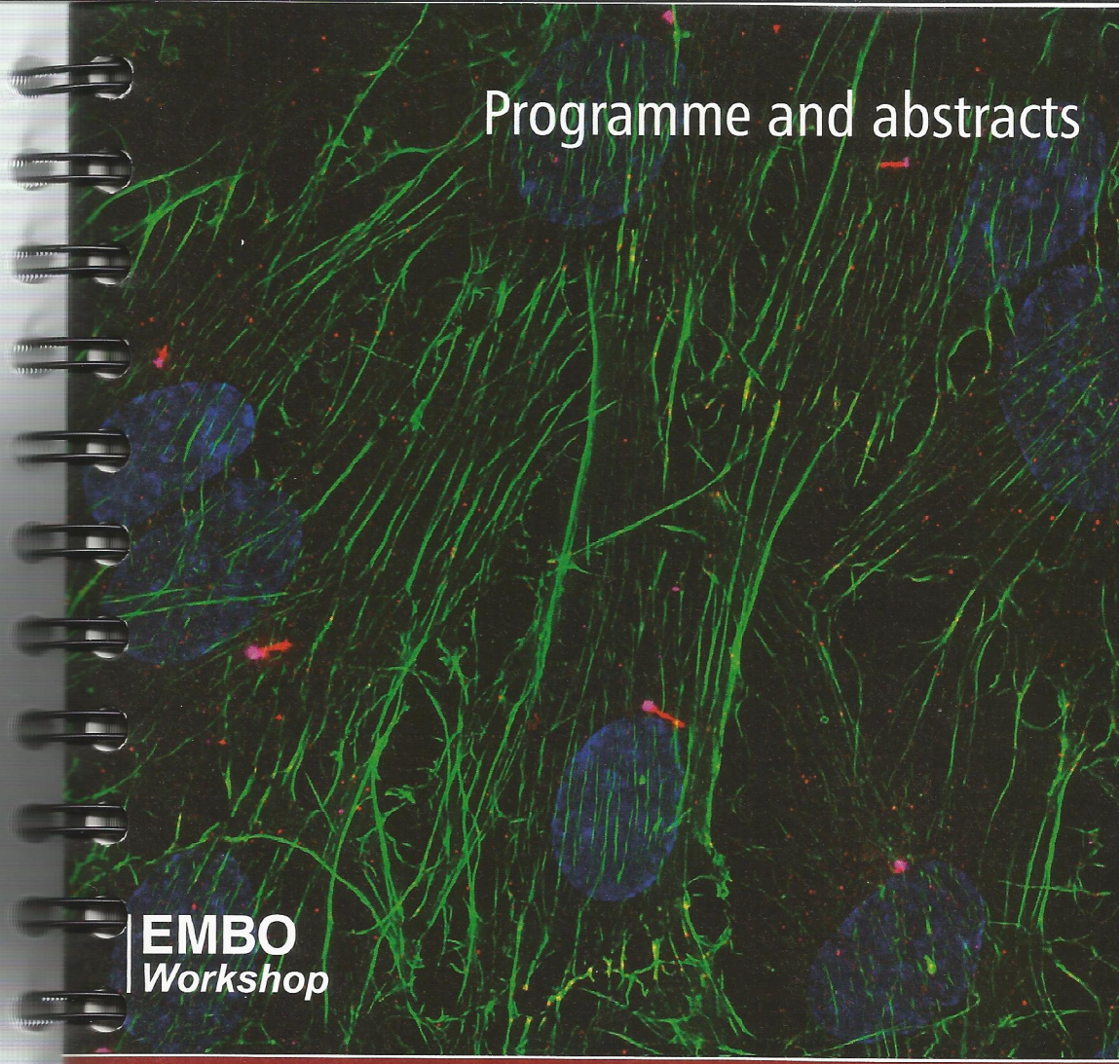

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Poster presentation
Centrosomes, basal bodies and ciliogenesis

T6-P-19

TBCCD1 IS A KEY REGULATOR OF CENTROSOMAL MICROTUBULE ANCHOR AND BASAL BODY POSITIONING/ATTACHMENT

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Objectives: Successful cilia assembly requires a correct positioning and anchoring of the centrosome's mother centriole/basal body (BB) to the cell membrane. A clear picture of the different signals and players involved in centrosome positioning/anchoring is still not available. Published work from our group identified a new TBCC domain-containing human protein (TBCCD1). Depletion of TBCCD1 in human RPE-1 cells severely affects the relative position of the centrosome to nucleus and the efficiency of cells to assemble primary cilia. Our aim is to dissect the mechanisms involving TBCCD1 in centrosome/BB positioning and anchoring during ciliogenesis. Methods: Impact of depletion and overexpression of TBCCD1 protein was characterized in human RPE-1 cells and in the ciliate Paramecia. We used BioID approach to define the human TBCCD1 interactome. Results: Our recent data clearly shows that TBCCD1 is involved in centrosome microtubule (MT) anchoring and organization in RPE-1 cells and is required to normal localization patterns of acetylated MTs, Cep170 and PCM1. Moreover, TBCCD1 is localized at the centriole distal end. Among the identified proteins by BioID there were several well-known proteins encoded by ciliopathy genes, e.g. centrosomal protein OFD1 which localization is affected by TBCCD1 knockdown. In the ciliate Paramecia the complex cortex organization, basal bodies duplication and positioning/anchoring are dramatically affected by TBCCD1 depletion. Conclusion: We propose that TBCCD1 is required for MT-anchoring and -organization activity at the centrosome, probably throughout interactions with some of its partners, with critical implications in basal body positioning/attachment to the cell membrane. Funding: PEst-OE/QUI/UI0612/2013, IPL/2016/TBCCentro_ESTeSL+IPL/2017/CILIOPAT/ESTeSL.