



EDITORIAL

Telocytes and telocytes-like cells. Past, present, and above all – future

*Editorial*

This special issue regarding telocytes will appear in 2019, and it can be seen as a precursor for new developments arising in the research regarding telocytes. Since their initial description, as cells with a small body and long, slender prolongations called telopodes, and the initial hypotheses regarding their functions, these cells have entered into the mainstream molecular biology in the past ten years. However, there are still many unknowns regarding them, and one of the most important is represented by what they actually are – a distinct cell population or a particular morphology of different cell populations (fibroblast like, lymphatic cells, stem cells, etc.).

Petrea et al. showed in a study regarding telopode and filopode-projecting heterogeneous stromal cells in the human sclera niche, that the presence of cells with prolongations with a telopode-like morphology is not enough to allow a positive identification of telocytes; moreover, telopodes can be easily misidentified with filopodes, structures that can be identified in cells located in the same niches with cells having telopode-like prolongations (Petrea et al., 2018a). In another study performed by Petrea et al. on rat samples, they showed the presence of telocyte-like cells containing Weibel–Palade bodies in animal (rat) lamina fusca. The authors preferred the usage of the term telocyte-like as the cells they have identified to be morphologically similar to telocytes were, most likely, descendants from a myelomonocytic line. These cells could have roles in vasculogenesis or lymphangiogenesis, and lamina fusca could be seen as a storage facility for endothelial precursors projecting telopodes (Petrea et al., 2018b). In a study evaluating the molecular phenotypes of the human kidney, Rusu et al. showed the presence of myoid stromal cells with a telocyte morphology; these types of cells had different immunophenotypes, depending on the location: capsular telocyte-like cells expressed nestin, endoglin and CD34; the subcapsular telocyte-like cells variably expressed CD34-, nestin, endoglin, alpha-SMA and SMM, a phenotype suggesting them to be myoid cells; interstitial myoid telocyte-like cells had an immunophenotype similar to the one identified in the subcapsular space (Rusu et al., 2018b). Vannucchi and Traini studied telocyte-like cells in the mucosal layer of the human bladder, and their possible functions in the detrusor overactive diseases. In their study, the authors showed that telocytes, associated with myofibroblasts and urothelium, form a unique system involved in the regulation of the urinary bladder function (Vannucchi and Traini, 2018). Manta et al. studied a potential correlation between lymph

vessels and telocyte-like structures. The study was performed on samples of uterine leiomyoma, using CD34, podoplanin (D2-40) and alpha-SMA markers. Their results, which were later confirmed by other studies, suggested that at least some telocyte-like structures could be in fact lymphatic endothelial cells that can appear in particular circumstances, both in light and electron microscopy, as spindle-shaped cells with long and thin prolongations (Manta et al., 2018). In a study regarding stromal cells/telocytes and endothelial progenitors in the perivascular niches of the trigeminal ganglion, Rusu et al. showed that at least a subset of trigeminal ganglion stromal cells/telocytes are in fact progenitor cells, possibly routed from the pia mater covering this anatomical structure (Rusu et al., 2018a). Hostiuc et al. aimed in two review studies, to reevaluate the evidence potentially linking cardiac telocytes with two serious cardiovascular disorders, namely atrial fibrillation and acute myocardial infarction (Hostiuc et al., 2018b, 2018a). Both studies showed a lack of definite evidence correlating telocytes with the studied cardiac disorders, implying that such correlations should be performed using more rigorous, scientific methodologies; moreover, they cautioned that often discussions from previous studies are taken by new articles as results (a phenomenon known as ipse dixit), distorting the objectivity of the scientific analysis of correlations between basic biology and diseases.

In conclusion, this special issue can be seen as a precursor of what future studies regarding telocytes should review, and cautions the improper usage of suboptimal scientific methodologies in fundamental research.

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