THE ROLE OF TELOCYTES IN REGENERATION

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The fields of tissue engineering and regenerative medicine are yet to develop an anticipated therapeutic breaktrough. Despite a sustained research effort, treatments with stem cells are very limited, and for a great majority of serious medical conditions there is no major benefit yet. In the last 5 years we characterized a peculiar population of interstitial cells, the telocytes (TC), which interact with progenitor cells in all tissues explored, including brain related tissues (such as meninges and choroid plexus). TC have a small cell body and very long and thin cell prolongations-telopodes, with moniliform appearance, dichotomous branching and 3D-network distribution. Telopodes are in close vicinity with nerve endings, blood vessels and different types of progenitor cells, suggesting a role of telocytes in intercellular signalling (via shed microvesicles or exosomes) in all tissue types. In brain, the presence of TC in proximity of areas populated with neural progenitors (meninges and subventricular zone) suggests an implication in differentiation and migration of neural stem cells and in the final outcome of endogeneous neurorestoration.