Live cell imaging

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1. **Short description of the infrastructure.**

The live cell imaging technology platform is an important tool for studying molecular and cellular function of neuronal and non-neuronal cells and tissues. It has a broad range of applications such as exploring disease mechanisms, performing clinical diagnosis and developing new treatments. This system gives MultiPark scientists an opportunity to study single molecule dynamics in high resolution, to track moving organelles both short term and long term, and to keep long-term track of cell migration and cell differentiation. Live imaging platform has brought cellular study to a more detailed and defined level. It is now greatly in need and often used. Moreover, the system was upgraded with a spinning disk module, which allows live imaging of tissue slice or organoids.
Technical Information: The Nikon Ti-E is a fully motorised research microscope with Spectra X light engine and EMCCD, suitable for imaging of fluorescence labelling, such as DAPI, CFP, GFP, YFP, mCherry and Cy5. Spinning disk module.

2. **Is this infrastructure receiving support also from other Strategic Research Areas (SRAs) or organizations at Lund University (e.g. Medical faculty, LBIC). If yes, please specify the type of support and its amount.**

yes.

3. **Number and names of MultiPark senior researchers using the infrastructure in the period 2018-2020[1].**

By now 6 different research groups.

4. **Number and names of senior researchers outside of Multipark and/or non-academic partners using the infrastructure 2018-2020.**

Yes, (from Merab Kokaia)

5. **Does the infrastructure have a steering document accessible to the users? If yes, when was it last updated?[2]**

Yes. Last updated in Feb 2020.

6. **Is the infrastructure charging user fees? If yes, state the amount and what is covered by the user fees.**

About 50 SEK/hour (Based on the annual costs)

7. **List publications generated with the help of this infrastructure during the past 3 years (2018-2020). Do not include manuscripts in preparation and please give the full reference (i.e., complete author list, complete title, journal name with year, volume, pages)[3].**

[1] If the infrastructure was first established in 2020, please include this information.

[2] Note that the Multipark leadership may ask to see this document with a very short notice.

[3] If the infrastructure was first established in 2020, please include this information here too.

(Many users have some manuscripts under reviewing or revision now, they will be reported in future).

1. Elabi O, Gaceb A, Carlsson R, Padel T, Soylu-Kucharz R, Cortijo I, Li W, Li JiaYi and **Paul G**. Human a-synuclein overexpression in a ouse model of Parkinson's disease leads to vascular pathology, blood brain barrier leakage and pericyte activation. Scientific Reports 2021, 11:1120 doi.org/10.1038/s41598-020-80889-8
2. Gaceb A, Barbariga M and **Paul G**. An *in vitro* partial lesion model of differentiated human mesencephalic neurons: effect of pericyte secretome on phenotypic markers. J Mol Neurosci. 2020 Nov;70(11):1914-1925. doi: 10.1007/s12031-020-01589-6
3. Mehmeti-Ajradini M , Bergenfelz C, Larsson AM, Carlsson R, Riesbeck K, Ahl J, Janols H, Wullt M , Bredberg A , Kallberg E , Bjork Gunnarsdottir F, Rydberg Millrudd C , Ryden L, **Paul G** , Loman N, Adolfsson J , Carneiro A, Jirstrom K, Killander F, Bexell D, Leandersson K. Human G-MDSCs are neutrophils at distinct maturation stages promoting tumor growth in breast cancer. Life Sci Alliance. 2020 Sep 21;3(11):e202000893.doi: 10.26508/lsa.202000893.
4. Roth M, Enström A, Aghabeick C, Carlsson C, Genove G and **Paul G**. Parenchymal pericytes are not the major contributor of extracellular matrix in the fibrotic scar after stroke. Journal of Neuroscience Research 2019. Nov 22. doi: 10.1002/jnr.24557
5. Roth M, Gaceb A, Enström A, Padel, T, Genove G, Özen I and **Paul G**. Regulator of G-Protein Signaling 5 regulates the shift from perivascular to parenchymal pericytes in the chronic phase after stroke. FASEB 2019 April 30. FASEB J. 2019 Aug;33(8):8990-8998. doi: 10.1096/fj.201900153R.
6. Özen I, Roth M, Barbariga M, Gaceb A, Deierborg, T, Genové G and **Paul G**. Loss of Regulator of G-Protein Signaling 5 leads to neurovascular protection in stroke. Stroke. 2018 Sep;49(9):2182-2190. doi: 10.1161/STROKEAHA.118.020124
7. Padel T, Roth M, Gaceb A, Li JY, Björkqvist M and **Paul G**. Brain pericyte activation occurs early in Huntington's disease. Exp Neurol. 2018 Apr 7;305:139-150. doi: 10.1016/j.expneurol.2018.03.015
8. Carlsson R, Özen I, Barbariga M, Gaceb A, Roth M and **Paul G**. STAT3 precedes HIF1α transcriptional responses to oxygen and oxygen and glucose deprivation in human brain pericytes. PLoS One. 2018 Mar 8;13(3):e0194146. doi: 10.1371
9. Gaceb A., Özen I., **Padel T.,** Barbariga M., **Paul G**. Pericytes secrete pro-regenerative molecules in response to Platelet-derived growth factor-BB. J Cereb Blood Flow Metab. 2018 Jan; 38(1):45-57. doi: 10.1177/0271678X17719645.
10. Itzia Jimenez-Ferrer, Filip Bäckström, Alfredo Dueñas-Rey, Michael Jewett, Antonio Boza-Serrano, Kelvin C. Luk, Tomas Deierborg and Maria Swanberg The MHC class II transactivator modulates seeded alpha-synuclein pathology and dopaminergic neurodegeneration in an in vivo rat model of Parkinson's disease Brain Behavior, and Immunity 91: 369-382, Jan 2021.