

MultiPark/StemTherapy LightSheet Microscopy (LSM) platform

Coordinator: Malin Parmar

1. Short description of the infrastructure.

The LightSheet Microscopy (LSM) platform is available for all members of MultiPark and StemTherapy. It offers, for a fee, training in the use of the LS microscope and the associated Arivis software. The two workstations used for analysis of the images are available for licensed users on a case-by-case basis.

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, it is shared 2:1 with StemTherapy.

3. Number and names of MultiPark senior researchers using the infrastructure in the period 2018-2020¹.

Over this period the platform has been used by members of 7 MultiPark groups, led by Malin Parmar, Johan Jakobsson, Agnete Kirkeby, Daniella Ottosson, Roger Olsson, Iben Lundgaard and Tomas Björklund.

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

During this period four StemTherapy members, Zaal Kokaia, Karsten Ruscher, Tania Ramos and Darcy Wagner, have used the platform.

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

Yes. Last updated on November 24, 2019.

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

Training Fee: The training fee is 500 SEK/hour. Number of hours used for training is determined on a case by case basis, depending on the user's previous experience and specific needs.

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.

User Fee: For MultiPark and StemTherapy users the fee is 250 SEK/hour, calculated to cover parts of service, maintenance and running costs, etc. Personal support at the microscope will be charged at an additional rate of 250 SEK/

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.

Images generated by the LSM platform have been presented at a number of international meetings during oral presentations and posters, and in the following four publications:

Patrick Aldrin-Kirk, Andreas Heuer, Daniella Rylander Ottosson, Marcus Davidsson, Bengt Mattsson and Tomas Björklund. Chemogenetic modulation of cholinergic interneurons reveals their regulating role on the direct and indirect output pathways from the striatum. *Neurobiology of Disease* 109:148-162, 2018.

Andrew Adler, Tiagi Cardoso, Sara Nolbrant, Bengt Mattsson, Didre Hoban, Ulla Jarl, Jenny Nelander Wahlestedt, Shane Grealish, Anders Björklund and Malin Parmar. hESC-Derived Dopaminergic Transplants Integrate into Basal Ganglia Circuitry in a Preclinical Model of Parkinson's Disease. *Cell Reports* 28, 3462–3473, 2019.

Bèchet NB, Kylkilahti TM, Mattsson B, Petrasova M, Shanbhag NC, Lundgaard I. Light sheet fluorescence microscopy of optically cleared brains for studying the glymphatic system. *J Cereb Blood Flow Metab.* 40(10):1975-1986, 2020.

Deirdre B. Hoban, Shelby Shrigley, Bengt Mattsson, Ludivine S. Breger, Ulla Jarl, Tiago Cardoso, Jenny Nelander Wahlestedt, Kelvin C. Luk, Anders Björklund and Malin Parmar Impact of α -synuclein pathology on transplanted hESC-derived dopamine neurons in a humanized α -synuclein rat model of PD. *Proc Natl Acad Sci U S A.* 117(26): 15209–15220, 2020.

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