

FACS Aria III

Flow Cytometry Analysis and Fluorescence Activated Cell Sorting (FACS)

Anna Hammarberg

1. Short description of the infrastructure.

The FACS facility is available for everyone to use.

Flow cytometry enables measurement of fluorescence intensity of particles (cells) in a liquid stream. Analysis of live and fixed cells may be based on size, granularity/complexity, fluorescent proteins, cell surface antigen expression, intracellular antigen expression, DNA content

Flow cytometry is ideal for multiplexing targets using multiple stainings and dyes.

Cell sorter: BD FACS Aria III

3 LASER instrument: 488 nm, 561 nm, 633 nm; 10 fluorescence channels

The FACS Aria may be used for analysis or for physically separating out cell populations based on their fluorescence labeling

- Purity sort
- Enrichment of rare populations
- Single cell sort

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.

No

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

1. Agnete Kirkeby
2. Cecilia Lundberg
3. Christian Hansen
4. Daniella Ottosson
5. Johan Jakobsson
6. Laurent Roybon
7. Malin Parmar
8. Tomas Björklund
9. Tomas Deierborg
10. Yia-Yi Li

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

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

1. Anna Darabi
2. David Bryder
3. Filipe Pereira
4. Gustav Smith
5. Paul Bourguine
6. Kristian Pietras
7. Ramin Massoumi
8. Sofie Mohlin

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

June 2020.

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

MultiPark user fee:

100 SEK/hour experiment time
100 SEK/hour introduction and training

External user fee:

450 SEK/hour scan time
450 SEK/hour introduction and training

User fees cover consumables

6. 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. Marote et al., Stem Cell Research 2018, in press, PMID: 29414418
2. Savchenko et al., Stem Cell Research 2018, in press, PMID: 29334629
3. Marote et al., Stem Cell Research, 2018, in press, PMID: 29353703
4. Marote et al., Stem Cell Research, 2018, in press, PMID: 29334630
5. Russ et al., Stem Cell Research, 2018, in press, PMID: 29331938
6. Shrigley et al., J. Vis. Exp., 2018 Feb 6; (132), e56904

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.

7. Boza-Serrano A et al Sci Rep. 2018 Jan 24;8(1):1550.
8. Pircs K, Petri R, Madsen S, Brattås PL, Vuono R, Ottosson DR, St-Amour I, Hersbach BA, Matusiak-Brückner M, Lundh SH, Petersén Å, Déglon N, Hébert SS, Parmar M, Barker RA, Jakobsson J. Huntingtin Aggregation Impairs Autophagy, Leading to Argonaute-2 Accumulation and Global MicroRNA Dysregulation. Cell Rep. 2018 Aug 7;24(6):1397-1406. doi: 10.1016/j.celrep.2018.07.017. PMID: 30089251
9. Molecular barcoding of viral vectors enables mapping and optimization of mRNA trans-splicing.
Davidsson M, Díaz-Fernández P, Torroba M, Schwich OD, Aldrin-Kirk P, Quintino L, Heuer A, Wang G, Lundberg C, Björklund T.
RNA. 2018 May;24(5):673-687. doi: 10.1261/rna.063925.117. Epub 2018 Jan 31.
PMID: 29386333
10. **Activation of neuronal genes via LINE-1 elements upon global DNA demethylation in human neural progenitors**
Marie E Jönsson et al, Nature Communications volume 10, Article number: 3182 (2019)
NATURE COMMUNICATIONS | (2019)10:3182 | <https://doi.org/10.1038/s41467-019-11150-8>
11. Grassi DA, Brattås PL, Jönsson ME, Atacho D, Karlsson O, Nolbrant S, Parmar M, Jakobsson J.
Profiling of lincRNAs in human pluripotent stem cell derived forebrain neural progenitor cells
Heliyon. 2019 Dec 31
www.sciencedirect.com/science/article/pii/S240584401936726X?via=ihub
12. Sabelström H, Petri R, Shchors K, Jandial R, Schmidt C, Sacheva R, Masic S, Yuan E, Fenster T, Martinez M, Saxena S, Nicolaides TP, Ilkhanizadeh S, Berger MS, Snyder EY, Weiss WA, Jakobsson J, Persson AI.
Driving Neuronal Differentiation through Reversal of an ERK1/2-miR-124-SOX9 Axis Abrogates Glioblastoma Aggressiveness
Cell Rep. 2019 Aug 20
[www.cell.com/cell-reports/fulltext/S2211-1247\(19\)30975-1](http://www.cell.com/cell-reports/fulltext/S2211-1247(19)30975-1)
13. Petri R, Brattås PL, Sharma Y, et al. **LINE-2 transposable elements are a source of functional human microRNAs and target sites.** PLoS Genet. 2019;15(3):e1008036. Published 2019 Mar 13. doi:10.1371/journal.pgen.1008036
14. Jönsson ME, Ludvik Brattås P, Gustafsson C, et al. **Activation of neuronal genes via LINE-1 elements upon global DNA demethylation in human neural progenitors.** Nat Commun. 2019;10(1):3182. Published 2019 Jul 18. doi:10.1038/s41467-019-11150-8
15. **The X-Linked DDX3X RNA Helicase Dictates Translation Reprogramming and Metastasis in Melanoma**
Bengt Phung, Maciej Cieśla, Adriana Sanna, Nicola Guzzi, Giulia Beneventi, Phuong Cao, Thi Ngoc, Martin Lauss, Rita Cabrita, Eugenia Cordero, Ana Bosch FridaRosengren, Jari Häkkinen, Klaus Griewank, Annette Paschen, Katja Harbst, Håkan Olsson, Christian Ingvar, Ana Carneiro, Göran Jönsson
www.sciencedirect.com/science/article/pii/S2211124719306989?via%3Dihub

16. **A systematic capsid evolution approach performed in vivo for the design of AAV vectors with tailored properties and tropism.**
Davidsson M, Wang G, Aldrin-Kirk P, Cardoso T, Nolbrant S, Hartnor M, Mudannayake J, Parmar M, Björklund T.
Proc Natl Acad Sci U S A. 2019 Dec 9;116(52):27053-62. doi: 10.1073/pnas.1910061116. PMID: 31818949
17. Jessica Giacomoni, Andreas Bruzelius, Christina-Anastasia Stamouli, Daniella Rylander Ottosson. **Direct Conversion of Human Stem Cell-Derived Glial Progenitor Cells into GABAergic Interneurons.** Cells 2020, 9(11), 2451; <https://doi.org/10.3390/cells9112451>
18. Daams R, Sime W, Leandersson K, Sitnicka E, Massoumi R. Deletion of Nemo-like Kinase in T Cells Reduces Single-Positive CD8(+) Thymocyte Population. Journal of immunology (Baltimore, Md : 1950). 2020.
19. Jönsson ME, Garza R, Sharma Y, et al. Activation of endogenous retroviruses during brain development causes an inflammatory response [published online ahead of print, 2021 Mar 1]. *EMBO J.* 2021;e106423. doi:10.15252/embj.2020106423
20. [Human iPSC-Derived Hippocampal Spheroids: An Innovative Tool for Stratifying Alzheimer Disease Patient-Specific Cellular Phenotypes and Developing Therapies.](#)
Pomeshchik Y, Klementieva O, Gil J, Martinsson I, Hansen MG, de Vries T, Sancho-Balsells A, Russ K, Savchenko E, Collin A, Vaz AR, Bagnoli S, Nacmias B, Rampon C, Sorbi S, Brites D, Marko-Varga G, Kokaia Z, Rezeli M, Gouras GK, Roybon L. Stem Cell Reports. 2020 Jul 14;15(1):256-273. doi: 10.1016/j.stemcr.2020.06.001. Epub 2020 Jun 25.
21. [Generation of an induced pluripotent stem cell line \(CSC-32\) from a patient with Parkinson's disease carrying a heterozygous variation p.A53T in the SNCA gene.](#)
Azevedo C, Chumarina M, Serafimova E, Goldwurm S, Collin A, Roybon L, Savchenko E, Pomeshchik Y.
22. [Voluntary running does not reduce neuroinflammation or improve non-cognitive behavior in the 5xFAD mouse model of Alzheimer's disease.](#)
Svensson M, Andersson E, Manouchehrian O, Yang Y, Deierborg T. *Sci Rep.* 2020 Jan 28;10(1):1346. doi: 10.1038/s41598-020-58309-8. PMID: 31992814
23. [The human bone marrow harbors a CD45- CD11B+ cell progenitor permitting rapid microglia-like cell derivative approaches.](#)
Bruzelius A, Hidalgo I, Boza-Serrano A, Hjelmér AG, Tison A, Deierborg T, Bengzon J, Ramos-Moreno T. *Stem Cells Transl Med.* 2020 Dec 9. doi: 10.1002/sctm.20-0127. Online ahead of print. PMID: 33295698
24. [The effect of electroconvulsive therapy on neuroinflammation, behavior and amyloid plaques in the 5xFAD mouse model of Alzheimer's disease.](#)
Svensson M, Olsson G, Yang Y, Bachiller S, Ekemohn M, Ekstrand J, Deierborg T. *Sci Rep.* 2021 Mar 1;11(1):4910. doi: 10.1038/s41598-021-83998-0. PMID: 33649346
25. Pimpalwar N, Czuba T, Landenhed Smith M, Nilsson J, Gidlöf O, Smith JG. **Methods for isolation and transcriptional profiling of individual cells from the human heart.** *Heliyon* 2020;6:e05810. <https://pubmed.ncbi.nlm.nih.gov/33426328/>

