

Materials List for

Generation and Downstream Analysis of Single-Cell and Single-Nuclei Transcriptomes in Brain Organoids

Miriam Wandres^{*1,2}, Denise Aigner^{*1,2}, Nicolai Kastelic^{1,3}, Anastasiya Boltengagen¹, Agnieszka Rybak-Wolf^{1,3}, Nikolaus Rajewsky^{1,2}

¹Berlin Institute for Medical Systems Biology (BIMSB), Max Delbrück Center for Molecular Medicine (MDC) ²Institut für Biologie, Humboldt-Universität zu Berlin ³Organoid platform, Berlin Institute for Medical Systems Biology (BIMSB), Max Delbrück Center for Molecular Medicine (MDC)

* These authors contributed equally

Corresponding Authors

Agnieszka Rybak-Wolf

agnieszka.rybak@mdc-berlin.de

Nikolaus Rajewsky

rajewsky@mdc-berlin.de

Citation

Wandres, M., Aigner, D., Kastelic, N., Boltengagen, A., Rybak-Wolf, A., Rajewsky, N. Generation and Downstream Analysis of Single-Cell and Single-Nuclei Transcriptomes in Brain Organoids. *J. Vis. Exp.* (205), e66225, doi:10.3791/66225 (2024).

Date Published

March 29, 2024

DOI

10.3791/66225

URL

jove.com/video/66225

Materials

Name	Company	Catalog Number	Comments
1,4-DITHIO-DL-THREIT-LSG., F. D. MOL.-BIOL., ~1 M IN H ₂ O (DTT)	Sigma	43816-10ML	
1.5 ml DNA low binding tubes	VWR	525-0130	microcentrifuge tube
10x Cellranger pipeline			analysis pipeline
15 ml Falcon	Falcon		Centrifuge tube
2-Mercaptoethanol (BME)	Life Technologies	21985023	
50 ml Falcon	Falcon		Centrifuge tube
A83-01	Bio Technologies	379762	
Antibiotic/Antimycotic Solution (100X)	Life Technologies	15240062	
B-27 Plus Supplement	Life Technologies	17504044	
B-27 Supplement without vitamin A	Life Technologies	12587010	
Bovine serum albumin, fatty acid free (BSA)	Sigma Aldrich	A8806-5G	
cAMP	Biogems	6099240	
cAMP	Biogems	6099240	
C-CHIP NEUBAUER IMPROVED	VWR	DHC-N01	
Cell strainer 40 µm	Neolab	352340	
Cell strainer 70 µm (white) Nylon	Sigma	CLS431751-50EA	
Chromium Controller & Next GEM Accessory Kit	10X Genomics	1000204	
Chromium Next GEM Chip G Single Cell Kit, 16 rxns	10X Genomics	1000127	
Chromium Next GEM Single Cell 3' Kit v3.1	10X Genomics	1000268	
Complete, EDTA-free Protease Inhibitor Cocktail	Roche	11873580001	
DAPI	MERCK Chemicals	0000001722	

DMEM/F12	Life Technologies	11320074	
Dounce tissue grinder set 2 mL complete	Sigma Aldrich	10536355	
Essential E8 Flex Medium	Life Technologies	A2858501	
EVE Cell Counting Slides	VWR	EVS-050 (734-2676)	
Foetal bovine serum tetracycline free (FBS)	PAN Biotech	P30-3602	
Geltrex LDEV-Free (coating)	Life Technologies	A1413302	
gentleMACS	Miltenyi Biotec		dissociation maschine
GlutaMAX supplements	Life Technologies	35050038	
Heparin sodium cell culture tested	Sigma	H3149-10KU	
human recombinant BDNF	StemCell Technologies	78005.3	
human recombinant GDNF	StemCell Technologies	78058.3	
Insulin Solution Human	Sigma Aldrich	I2643-25MG	
Knockout serum replacement	Life Technologies	10828028	
LDN193189 Hydrochloride 98%	Sigma Aldrich	130-106-540	
MEM non-essential amino acid (100x)	Sigma Aldrich	M7145-100ml	
MgCl ₂ Magnesium Chloride (1M) RNase free	Thermo Scientific	AM9530G	
mTeSR Plus	StemCell Technologies	100-0276	stem cell medium
mTeSR1	StemCell Technologies	85850	stem cell medium
N2 Supplement	StemCell Technologies	17502048	
Neural Tissue Dissociation Kit	Miltenyi Biotec B.V. & Co. KG	130-092-628	
Neurobasal Plus	Life Technologies	A3582901	
NextSeq500 system	Illumina		Sequencer
NP-40 Surfact-Amps Detergent Solution	Life Technologies	28324	
PBS Dulbecco's	Invitrogen	14190169	
PenStrep (Penicillin - Streptomycin)	Life Technologies	15140122	
Percoll	Th. Geyer	10668276	
Pluronic (R) F-127	Sigma Aldrich	P2443-1KG	
RiboLock RNase Inhibitor	Life Technologies	EO0382	
Rock Inhibitor (Y-27632 dihydrochloride) SB	Biomol	Cay10005583-10	
SB 431542	Biogems	3014193	
Sodium chloride NaCl (5M), RNase-free-100 mL	Invitrogen	AM9760G	
StemFlex Medium	Thermo Scientific	A3349401	stem cell medium
StemMACS iPS-Brew XF	Miltenyi Biotec	130-104-368	stem cell medium
TC-Platte 96 Well, round bottom	Sarstedt	83.3925.500	
TISSUi006-A	TissUse GmbH	https://hpscreg.eu/cell-line/TISSUi006-A	
Trypan Blue	T8154-20ml	Sigma	
TrypLE Express Enzyme, no phenol red	Life Technologies	12604013	Trypsin-based reagent
UltraPure 1M Tris-HCl Buffer, pH 7.5	Life Technologies	15567027	
XAV939	Enzo Life sciences	BML-WN100-0005	