

### Reference list

# Safe generation of single-cell suspensions and homogenates from virus-containing samples with the gentleMACS<sup>™</sup> Dissociators

The gentleMACS<sup>™</sup> Dissociators are a family of benchtop instruments for the automated and standardized dissociation or homogenization of virtually any tissue. Viable single-cell suspensions are efficiently obtained by using our unique C Tubes in combination with our tissue-specific enzyme kits, whereas thorough homogenates are easily obtained by using the unique M Tubes. After processing, samples can be used for any cellular and molecular downstream analyses.

Working with infectious agents, especially viruses, can be quite a challenge due to the hazardous nature of the sample material and the risk of cross-contamination. Over 500 publications using the gentleMACS System in virus research show that our devices can assist in many ways:

- · Closed and sterile system reduces hazards of handling
- Single-use consumables minimize cross-contamination and allow easy disposal
- Small footprint of the instruments allows for installation on a sterile work bench
- Over 40 optimized and ready-to-use gentleMACS Programs simplify and standardize the handling of samples

## Selected references

#### Coronaviridae

## MERS-CoV: Determination of virus titer and isolation of total RNA from infected mouse lungs

Knaap, R. C. M. *et al.* (2019) The deubiquitinating activity of middle east respiratory syndrome coronavirus papain-like protease delays the innate immune response and enhances virulence in a mouse model. BioRxiv. Preprint. Microbiology. *https://www.biorxiv.org/content/10.1101/751578v1.full* 

## SARS-CoV: Determination of virus titer in infected mouse lungs

Castaño-Rodriguez, C. *et al.* (2018) Role of severe acute respiratory syndrome coronavirus viroporins E, 3a, and 8a in replication and pathogenesis. mBio 9(3): e02325-17. *https://www.ncbi.nlm.nih.gov/pubmed/29789363* 

# SARS-CoV: Determination of virus titer and isolation of total RNA from infected mouse lungs

Jimenez-Guardeño, J. M. *et al.* (2015) Identification of the mechanisms causing reversion to virulence in an attenuated SARS-CoV for the design of a genetically stable vaccine. PLOS Pathogens 11(10): e1005215.

https://www.ncbi.nlm.nih.gov/pubmed/26513244

Jimenez-Guardeño, J. M. *et al.* (2014) The PDZ-Binding motif of severe acute respiratory syndrome coronavirus envelope protein is a determinant of viral pathogenesis. PLoS Pathogens 10(8), e1004320.

https://www.ncbi.nlm.nih.gov/pubmed/25122212

## SARS-CoV: Isolation of total RNA from infected mouse lungs

Nieto-Torres, J. L. *et al.* (2014) Severe acute respiratory syndrome coronavirus envelope protein ion channel activity promotes virus fitness and pathogenesis. PLoS Pathogens 10(5): e1004077.

https://www.ncbi.nlm.nih.gov/pubmed/24788150

#### Filoviridae

## Ebolavirus: Determination of virus titer in infected mouse livers and spleens

Herbert, A. S. *et al.* (2015) Niemann-Pick C1 is essential for ebolavirus replication and pathogenesis *in vivo*. mBio 6, e00565-15.

https://www.ncbi.nlm.nih.gov/pubmed/26015498

#### Ebolavirus: Determination of virus titer in infected mouse hearts, livers, kidneys, brains, spleens, and lungs

Zumbrun, E. et al. (2012) Development of a murine model for aerosolized ebolavirus infection using a panel of recombinant inbred mice. Viruses 4(12), 3468-3493. https://www.ncbi.nlm.nih.gov/pubmed/23207275

#### Flaviviridae

#### Hepatitis C virus: Homogenization of infected human liver samples for protein isolation

Rowe, I. A. et al. (2014) Paracrine signals from liver sinusoidal endothelium regulate hepatitis C virus replication: Hepatology. Hepatology 59(2), 375-384.

https://www.ncbi.nlm.nih.gov/pubmed/23775568

#### West Nile virus: Dissociation of infected mouse spleens into single-cell suspensions for flow cytometry

Stone, A. E. L. et al. (2019) RIG-I-like receptors direct inflammatory macrophage polarization against West Nile virus infection. Nature Communications 10(1), 3649.

https://www.ncbi.nlm.nih.gov/pubmed/31409781

#### West Nile virus: Determination of viral load in frozen tissue samples from infected rhesus macaques

Verstrepen, B. E. et al. (2014) Vaccine-induced protection of rhesus macaques against plasma viremia after intradermal infection with a European lineage 1 strain of West Nile virus. PLoS ONE 9(1), e112568.

https://www.ncbi.nlm.nih.gov/pubmed/25392925

#### Zika virus: Isolation of mouse immune cells from infected lymph nodes and spleens

Khan, S. et al. (2019) Low expression of RNA sensors impacts Zika virus infection in the lower female reproductive tract. Nature Communications 10(1), 4344. https://www.ncbi.nlm.nih.gov/pubmed/31554802

#### Zika virus: Determination of viral load in infected mouse tissues

Kuszpit, K. et al. (2018) [18F]DPA-714 PET imaging reveals global neuroinflammation in Zika Virus-infected mice. Molecular Imaging and Biology 20(2), 275–283. https://www.ncbi.nlm.nih.gov/pubmed/28900831

Smith, D. R. et al. (2017) Neuropathogenesis of Zika Virus in a highly susceptible immunocompetent mouse model after antibody blockade of type I interferon. PLoS Neglected Tropical Diseases 11(1), e0005296.

https://www.ncbi.nlm.nih.gov/pubmed/28068342

#### Herpesviridae

#### Cytomegalovirus: Isolation of lymphocytes from infected mouse liver and salivary glands

Anderson, C. K. et al. (2019) CD8<sup>+</sup> T cells can compensate for the absence of conventional T cells during viral infection. Cell Reports 27(2), 537-548.e5.

https://www.ncbi.nlm.nih.gov/pubmed/30970256

#### Cytomegalovirus: Determination of virus titer and isolation of lymphocytes from infected mouse lungs

Morabito, K. M. et al. (2018) Memory inflation drives tissueresident memory CD8<sup>+</sup> T cell maintenance in the lung after intranasal vaccination with murine Cytomegalovirus. Frontiers in Immunology 9, 1861.

https://www.ncbi.nlm.nih.gov/pubmed/30154789

#### Cytomegalovirus: Homogenization of salivary glands, placenta, and fetal tissue from guinea pigs for **DNA** isolation

Auerbach, M. R. et al. (2014) A neutralizing anti-gH/gL monoclonal antibody is protective in the guinea pig model of congenital CMV infection. PLoS Pathogens 10(4), e1004060. https://www.ncbi.nlm.nih.gov/pubmed/24722349

#### Herpes simplex virus: Isolation of lymphocytes from infected mouse trigeminal ganglia

Doll, J. R. et al. (2020) Resolution of herpes simplex virus reactivation in vivo results in neuronal destruction. PLoS Pathogens 16(3), e1008296. https://www.ncbi.nlm.nih.gov/pubmed/32134994

#### Herpes simplex virus: Homogenization of infected mouse lungs for HPLC analyses

Quenelle, D. C. et al. (2018) Efficacy of pritelivir and acyclovir in the treatment of herpes simplex virus infections in a mouse model of herpes simplex encephalitis. Antiviral Research 149, 1–6.

https://www.ncbi.nlm.nih.gov/pubmed/29113740

#### Orthomyxoviridae

#### Influenza A virus: Dissociation of infected mouse lungs and lymph nodes into single-cell suspensions for flow cytometry

Hemann, E. A. *et al.* (2019) Interferon- $\lambda$  modulates dendritic cells to facilitate T cell immunity during infection with influenza A virus. Nature Immunology 20(8), 1035-1045. https://www.ncbi.nlm.nih.gov/pubmed/31235953

#### Influenza A virus: Dissociation of infected mouse lungs into single-cell suspensions

Er, J. Z. et al. (2019) Loss of T-bet confers survival advantage to influenza-bacterial superinfection. EMBO Journal 38(1). https://www.ncbi.nlm.nih.gov/pubmed/30322895

#### Influenza A virus: Isolation of vascular endothelial cells from infected mouse brains

Imakita, N. et al. (2019) Abrogated Caveolin-1 expression via histone modification enzyme Setdb2 regulates brain edema in a mouse model of influenza-associated encephalopathy. Scientific Reports 9(1), 284.

https://www.ncbi.nlm.nih.gov/pubmed/30670717

#### Influenza A virus: Homogenization of infected mouse lungs for extraction of viral RNA

Nguyen, T. T. T. et al. (2017) The IgM receptor FcµR limits tonic BCR signaling by regulating expression of the IgM BCR. Nature Immunology 18(3), 321-333. https://www.ncbi.nlm.nih.gov/pubmed/28135254

#### Influenza B virus: Determination of virus titer in infected mouse lunas

Chai, N. et al. (2017) A broadly protective therapeutic antibody against influenza B virus with two mechanisms of action. Nature Communications 8(1), 14234. https://www.ncbi.nlm.nih.gov/pubmed/28102191

#### **Picornaviridae**

#### **Rhinovirus: Isolation of total RNA from infected** mouse lunas

Mehta, A. K. et al. (2018) Tumor necrosis factor family member LIGHT acts with IL-1β and TGF-β to promote airway remodeling during rhinovirus infection. Allergy 73(7), 1415–1424. https://www.ncbi.nlm.nih.gov/pubmed/29315623

## Rhinovirus: Dissociation of infected mouse lungs into single-cell suspension for flow cytometry

Toussaint, M. *et al.* (2017) Host DNA released by NETosis promotes rhinovirus-induced type-2 allergic asthma exacerbation. Nature Medicine 23(6), 681–691. *https://www.ncbi.nlm.nih.gov/pubmed/28459437* 

Glanville, N. *et al.* (2016) Tbet deficiency causes T helper cell dependent airways eosinophilia and mucus hypersecretion in response to rhinovirus infection. PLoS Pathogens 12(9), e1005913.

https://www.ncbi.nlm.nih.gov/pubmed/27683080

Girkin, J. *et al.* (2015) CCL7 and IRF-7 mediate hallmark inflammatory and IFN responses following rhinovirus 1B infection. Journal of Immunology 194(10), 4924–4930. *https://www.ncbi.nlm.nih.gov/pubmed/25847975* 

#### Retroviridae

## HIV: Homogenization of infected mouse tissues for DNA and RNA isolation

Usmani, S. M. *et al.* (2019) HIV-1 balances the fitness costs and benefits of disrupting the host cell actin cytoskeleton early after mucosal transmission. Cell Host & Microbe 25(1), 73–86.e5. *https://www.ncbi.nlm.nih.gov/pubmed/30629922* 

## HIV: Dissociation of gut tissues from infected human patients

Lee, E. *et al.* (2019) Impact of antiretroviral therapy duration on HIV-1 infection of T cells within anatomic sites. Journal of Virology 94(3), e01270-19. *https://www.ncbi.nlm.nih.gov/pubmed/31723024* 

#### HIV: Dissociation of infected human cervical explants

Trifonova, R. T. *et al.* (2018) Myeloid cells in intact human cervical explants capture HIV and can transmit it to CD4 T cells. Frontiers in Immunology 9, 2719. *https://www.ncbi.nlm.nih.gov/pubmed/30532754* 

## SIV: Dissociation of intestinal biopsies from infected rhesus macaques

Ortiz, A. M. *et al.* (2018) Experimental microbial dysbiosis does not promote disease progression in SIV-infected macaques. Nature Medicine 24(9), 1313–1316. *https://www.ncbi.nlm.nih.gov/pubmed/30061696* 

## SIV: Homogenization of frozen tissue samples from infected rhesus macaques for DNA isolation

Marshall, V. A. *et al.* (2018) Gammaherpesvirus infection and malignant disease in rhesus macaques experimentally infected with SIV or SHIV. PLoS Pathogens 14(7), e1007130. *https://www.ncbi.nlm.nih.gov/pubmed/30001436* 

#### **Other viruses**

#### Andes virus: Homogenization of infected lungs from Golden Syrian hamsters for total RNA isolation Hammerbeck, C. D. *et al.* (2016) Depletion of alveolar

macrophages does not prevent hantavirus disease pathogenesis in Golden Syrian hamsters. Journal of Virology 90(14), 6200–6215.

https://www.ncbi.nlm.nih.gov/pubmed/27099308

## Chikungunya virus: Homogenization of infected mouse footpads for cytokine/chemokine profiling

Chan, Y. *et al.* (2019) Mutating chikungunya virus non-structural protein produces potent live-attenuated vaccine candidate. EMBO Molecular Medicine 11(6). *https://www.ncbi.nlm.nih.gov/pubmed/31015278* 

## Chikungunya virus: Determination of viral load by isolation of total RNA from infected mouse footpads

Teo, T.-H. *et al.* (2018) Plasmodium co-infection protects against chikungunya virus-induced pathologies. Nature Communications 9(1), 3905. *https://www.ncbi.nlm.nih.gov/pubmed/30254309* 

## Respiratory syncytial virus: Determination of virus titer in infected mouse lungs

Moffett, H. F. *et al.* (2019) B cells engineered to express pathogen-specific antibodies protect against infection. Science Immunology 4(35), eaax0644. *https://www.ncbi.nlm.nih.gov/pubmed/31101673* 



Miltenyi Biotec provides products and services worldwide. Visit www.miltenyibiotec.com/local to find your nearest Miltenyi Biotec contact.