

## Protocol For GentleLys - Native Cell Lysis Buffer - Stabilize

### Overview

The Cube Biotech GentleLys Buffer is the only 100% detergent-free, non-denaturing solution to lyse cultured insect and mammalian cells from plated cells as well as cells pelleted from suspension cultures while solubilizing all membranes in the process. GentleLys enables the extraction of soluble proteins and the stabilization of membrane proteins from all compartments of insect cells, mammalian cells and viruses. It is compatible with many applications, including Immunoassays, Protein Assays, Mass Spectrometry, and Protein Purification.

The Buffer comes in two variants: GentleLys – **Dissolve** which lyses cells in 15 min while GentleLys – **Stabilize** lyses all cells and makes the whole proteome (soluble and membrane proteins) of the cell available for your analytic approaches. It solubilizes all membranes and stabilizes expressed membrane proteins in their native conformation as well as native lipid environment in polymer-supported native nanodiscs. This process only takes two hours.

Please contact us if you have questions or need assistance optimizing a protocol for your application.  
contact@cube-biotech.com

### Equipment

- Ice bath
- Micropipettor
- Micropipetting tips
- Centrifuge
- Cellscraper
- pH meter
- Vortex mixer
- End-over-end shaker
- 2 ml Eppi Tubes

### Materials

- Cell Suspension Culture
- GentleLys - Native Cell Lysis Buffer - Stabilize
- Add 1 ml ddH<sub>2</sub>O to dissolve the lyophilized Buffer to restore:
  - 20mM HEPES pH 7.5
  - 100 mM NaCl
  - Special Engineered Copolymer

### Guidelines

- GentleLys Buffers do not contain protease or phosphatase inhibitors. If desired, add protease inhibitors to the Buffer prior to the assay.

- Use 1ml of cold GentleLys Buffer for every  $5 \times 10^6$  of cells (20  $\mu$ l of packed cells, which is equivalent to 40 mg of cells).

GentleLys can be used to lyse cells on plates to obtain concentrated protein extracts with the use of less Buffer.

- Since GentleLys is detergent-free and non-denaturing it does not interfere with the activity of soluble proteins as well as protein kinases and other enzymes/ membrane proteins.

- All GentleLys Buffers are compatible with protein concentration determination assays like BCA. The Buffers do not absorb at 280nm.

- GentleLys Buffers come as lyophilized powder to ensure stability and increased shelf life. Prior to use just add 1 ml ddH<sub>2</sub>O and mix until fully dissolved.

Dissolved GentleLys Buffer can be stored away from light at 4 °C for up to 6 months.

## Cell lysis and one-step Membrane Protein Stabilization with GentleLys - Stabilize: Monolayer-cultured cells

Note: If desired, add protease and phosphatase inhibitors to the GentleLys Buffers immediately before use. Remember that protease inhibitors can change the pH of GentleLys Buffers.

1. Carefully remove the culture medium from the adherent cells.
2. Wash cells twice with a cold Buffer of choice.
- a)
  3. Add cold GentleLys - Stabilize Buffer to the cells. Use 1 ml of Buffer per 75 cm<sup>2</sup> flask containing  $5 \times 10^6$  cells. Keep on ice for 120 minutes, swirling the plate occasionally for uniform spreading.
  4. Collect the lysate at one side of the flask using a cell scraper and transfer to a microcentrifuge tube. Centrifuge samples at 14,000 × g for 5 minutes to collect the cell debris.

### *Alternative*

- b)
  3. Add cold GentleLys - Stabilize Buffer to the cells. Use 1 ml of Buffer per 75 cm<sup>2</sup> flask containing  $5 \times 10^6$  cells. Keep on ice for 15 minutes, swirling the plate occasionally for uniform spreading.
  4. Collect the lysate at one side of the flask using a cell scraper and transfer to a microcentrifuge tube. Centrifuge samples at 14,000 × g for 15 minutes to pellet the cell debris, continue shaking the supernatant for 90 minutes, centrifuge sample for 60 minutes at 100,000 × g and continue with the supernatant. This includes all soluble proteins and all forms of native Nanodiscs carrying expressed membrane proteins.
5. Transfer the supernatant to a new tube for further analysis

## Cell lysis and one-step Membrane Protein Stabilization with GentleLys - Stabilize: Cultured cells

Note: If desired, add protease and phosphatase inhibitors to the GentleLys Buffers immediately before use. Remember that protease inhibitors can change the pH of GentleLys Buffers.

1. Collect cells by centrifugation at  $2500 \times g$  for 5 minutes. Discard the supernatant.
2. Wash cells twice in a cold Buffer of choice. Collect cells by centrifugation at  $2500 \times g$  for 5 minutes.
3. Add GentleLys Buffer to the cell pellet. Use 1 ml of GentleLys Buffer for 40 mg ( $5 \times 10^6$  of cells) of wet cell pellet. Resuspend the pellet by pipetting the mixture up and down.
  - a) 4. Shake the mixture gently for 120 minutes at  $4^\circ\text{C}$ . Centrifuge mixture at  $14,000 \times g$  for 15 minutes to pellet the cell debris. The supernatant includes all soluble proteins, all formed native Nanodiscs and all insolubilized membrane residues.

### Note

Quantities can be scaled up accordingly.

### Alternative

- a) 4. Shake the mixture for 15 minutes at  $4^\circ\text{C}$ , centrifuge the mixture at  $14,000 \times g$  for 15 minutes to pellet the cell debris, continue shaking the supernatant for 90 minutes, centrifuge the sample for 60 minutes at  $100,000 \times g$ , and continue with the supernatant. This includes all soluble proteins, and all formed native Nanodiscs carrying expressed membrane proteins.
5. Transfer the supernatant to a new tube for further analysis.