# Quality control of GPI-anchored proteins in the endoplasmic reticulum

**Morihisa Fujita**
Research Center for Glycoscience

E-mail:
morihisa-fujita@aist.go.jp

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Cells possess several quality control mechanisms for a proper folding and function of protein. Malfunction of the mechanisms causes some protein folding diseases. Many proteins are modified with a glycosylphosphatidylinositol (GPI) anchor in the endoplasmic reticulum (ER), but the quality control mechanisms of GPI-anchored proteins are not clear, so far. We developed a model misfolded GPI-anchored protein (Gas1*p). Gas1*p can be modified with a GPI anchor in ER, however, the modified Gas1*p was excreted and degraded rapidly *via* a proteasome. We found that deacylation of GPI by an enzyme (Bst1p) plays important role in the quality control of GPI-anchored proteins.

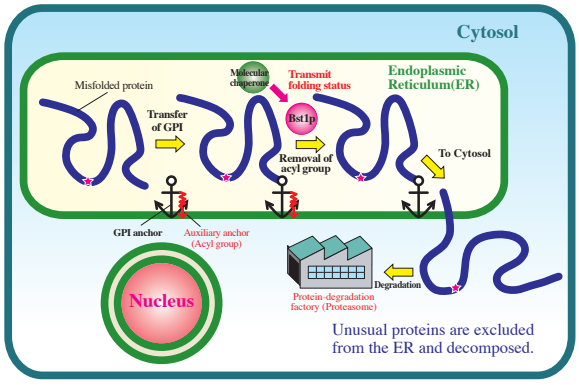


Figure : Proteins are monitored by quality control systems that ensure correct folding before exiting from the ER. There are a number of molecular chaperones and enzymes to assist proper protein folding in the ER. Misfolded proteins that fail to pass the quality control checkpoint are transported back to the cytosol, and degraded by the proteasome. GPI inositol deacylation by Bst1p is required for the quality control of GPI-anchored proteins.



# Traceable calibration for nanometrical step heights with AFMs

**Osamu Sato**
National Metrology Institute of Japan

E-mail:
osm-satou@aist.go.jp

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Step height standards are demanded in nano-manufacturing fields. NMIJ of AIST provides the calibration service for them since 2005 with a nanometrological AFM and an AFM with differential laser interferometers (DLI-AFM). In nanometric dimensional calibrations, microasperity and form deviation of object surfaces affect measurements. We have formulated a robust calibration method for nanometrical step height standards based on ISO 5436-1.

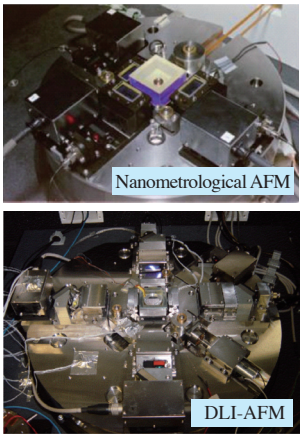


Figure 1: Instruments for nanometrical step calibration.

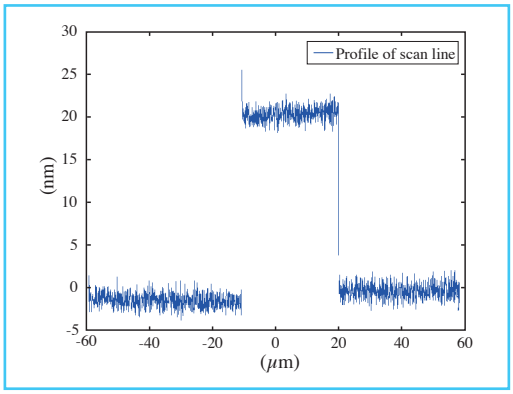


Figure 2: Microasperity on object surface.