Professor

Tel: +86-510-851-97071

Email: fujita@jiangnan.edu.cn

Web:

http://klccb.jiangnan.edu.cn/info/1005/1015.htm

Education & Experience

2014 – present	Professor, Jiangnan University
2012 – 2014	Assistant Professor, Osaka University
2008 – 2012	Specially Appointed Assistant Professor, Osaka University
2007 – 2008	Post-doctoral Fellow, Osaka University
2006 – 2007	Post-doctoral Fellow, University of Geneva
2006 – 2006	Post-doctoral Fellow, National Institute of Advanced Industrial Science and Technology (AIST)
2002 – 2006	M.Sc. and Ph.D., University of Tsukuba
1998 – 2002	B.Agr., University of Tsukuba

Research Fields

Our research interests are in the field of protein glycosylation and trafficking in eukaryotic cells. We are particularly focusing on understanding the physiological functions of a post-translational modification by a glycolipid termed

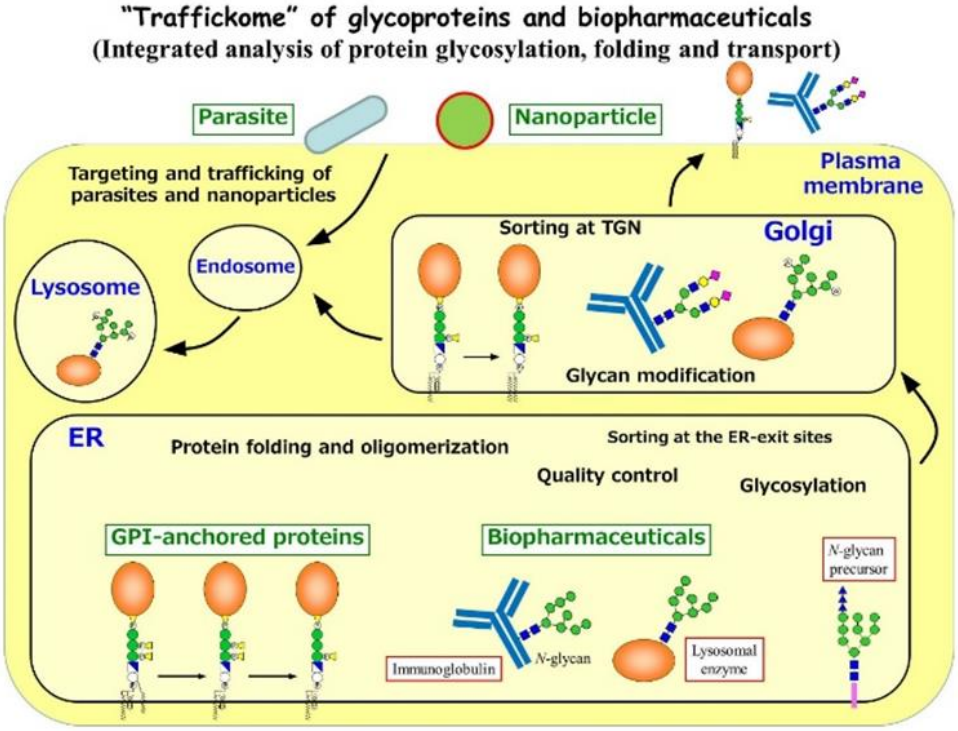
glycosylphosphatidylinositol (GPI). So far, we identified and characterized genes required for structural remodeling of GPI-anchors. Currently, we tries to understand the processes of intracellular trafficking of biologically and therapeutically important glycoproteins. To reveal the processes, we performs integrated analyses including genetic, cell biological and biochemical approaches using mammalian and yeast cells. The following subjects are main projects in our group.

1. Regulatory Mechanisms of Intracellular Transport of Glycoproteins

We are interested in the research regarding “Life of Glycoproteins”, which includes protein glycosylation, folding, sorting and transport. Most of secretory proteins are synthesized and glycosylated in the endoplasmic reticulum (ER). After the glycoproteins are folded and assembled, they are transported from the ER to the Golgi and are further delivered to the final destination. Using genetic and biochemical approaches, we try to identify and characterize factors required for glycoprotein transport and recombinant biopharmaceutical production.

2. Engineering of Mammalian Cells to Produce Biopharmaceuticals

Recombinant therapeutic proteins are becoming very important pharmaceutical agents for treating intractable diseases such as cancer and autoimmune diseases. Currently, complex therapeutic proteins are produced in mammalian cells, since most of them are difficult to form correct folding in other alternative organisms, and requires proper glycosylation for their stability and functions. However, production of biopharmaceuticals in mammalian cells still has some issues such as cost, low productivity, and heterogeneity of glycans. To overcome the issues, we engineer mammalian host cells and optimize them to produce biopharmaceuticals.



Selected Publications

1. Yi-Shi Liu, Xin-Yu Guo, Tetsuya Hirata, Yao Rong, Daisuke Motooka, Toshihiko Kitajima, Yoshiko Murakami, Xiao-Dong Gao, Shota Nakamura, Taroh Kinoshita, and **Morihisa Fujita***:
   N-Glycan dependent protein folding and ER retention regulates GPI-anchor processing
   J. Cell Biol. (2017) in press

2. Emmanuel Matabaro, Zeng'an He, Yi-Shi Liu, Hui-Jie Zhang, Xiao-Dong Gao, and **Morihisa Fujita***:
   Molecular switching system using glycosylphosphatidylinositol to select cells highly expressing recombinant proteins.
   Sci. Rep. (2017) 22;7(1):4033.

3. Gun-Hee Lee[#], **Morihisa Fujita**[#], Katsuyoshi Takaoka, Yoshiko Murakami, Yoshitaka Fujihara, Noriyuki Kanzawa, Kei-ichi Murakami., Eriko Kajikawa, Yoko Takada, Kazunobu Saito, Masahito Ikawa, Hiroshi Hamada, Yusuke Maeda, and Taroh Kinoshita ([#]equally contributed):
   A GPI processing phospholipase A2, PGAP6, modulates Nodal signaling in embryos by shedding CRIPTO.
   J. Cell Biol. (2016) 215(5):705-718.

4. Yao Rong, Shota Nakamura, Tetsuya Hirata, Daisuke Motooka, Yi-Shi Liu, Zeng-An He, Xiao-Dong Gao, Yusuke Maeda, Taroh Kinoshita, and **Morihisa Fujita***:
   Genome-Wide Screening of Genes Required for Glycosylphosphatidylinositol Biosynthesis.
   PLoS ONE, 10: e0138553 (2015)

5. Tetsuya Hirata, **Morihisa Fujita***, Shota Nakamura, Kazuyoshi Gotoh, Daisuke Motooka, Yoshiko Murakami, Yusuke Maeda, and Taroh Kinoshita* (*corresponding author):
   Post-Golgi anterograde transport requires GARP-dependent endosome-to-TGN retrograde transport.
   Mol. Biol. Cell, 26: 3071-84 (2015)

6. **Morihisa Fujita**, Reika Watanabe, Nina Jaensch, Maria Romanova-Michaelides, Tadashi Satoh, Masaki Kato, Howard Riezman, Yoshiki Yamaguchi, Yusuke Maeda, and Taroh Kinoshita:
   Sorting of GPI-anchored proteins into ER exit sites by p24 proteins is dependent on remodeled GPI.
   J. Cell Biol., 194: 61-75 (2011)

7. **Morihisa Fujita**, Yusuke Maeda, Moonjin Ra, Yoshiki Yamaguchi, Ryo Taguchi, and Taroh Kinoshita:
   GPI glycan remodeling by PGAP5 regulates transport of GPI-anchored proteins from the endoplasmic reticulum to the Golgi.
   Cell, 139: 352-365 (2009)

8. **Morihisa Fujita*** and Taroh Kinoshita:
GPI-anchor remodeling: Potential functions of GPI-anchors in intracellular trafficking and membrane dynamics.,
Biochim. Biophys. Acta, 1821 (8): 1050-1058 (2012)

9. **Morihisa Fujita** and Taroh Kinoshita:
Structural remodeling of GPI anchors during biosynthesis and after attachment to proteins.
FEBS Lett., 584 (9): 1670-1677 (2010)

10. **Morihisa Fujita** and Yoshifumi Jigami:
Lipid remodeling of GPI-anchored proteins and its function.
Biochim. Biophys. Acta, 1780(3): 410-20 (2008)