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Shionogi & Co., Ltd.

## Shionogi begins a novel glycoprotein research effort with Hokkaido University

Shionogi & Co., Ltd. (Shionogi; Head Office: Osaka, Japan; President: Motozo Shiono) enters into a joint research agreement with Hokkaido University (Professor Shin-ichiro Nishimura of the Hokkaido University Faculty of Science). The research will use carbohydrate-related functional bioinformatic technology developed by Professor Nishimura to support Shionogi's new R&D strategy for computer-assisted molecular design of novel medicines.

Professor Nishimura and his associates have established and filed patent applications for new technologies for producing biologically important and pharmaceutically potent glycoconjugates. The team has also developed the world's first automated carbohydrate synthesizer, which offers a promising method for synthesis of functional oligosaccharide, glycoprotein, and glycolipid so on. Under the agreement, Shionogi will use this technology to create next-generation biopharmaceuticals under the direction of Professor Nishimura. Shionogi will also establish a chair in biomolecular technology (Shionogi Laboratory of Biomolecular Chemistry) at the University of Hokkaido.

Abnormalities in the molecular recognition process in the cell-cell interaction have been shown to be a major cause in the development of cancer and immune disorders, as well as being related to aging. Because carbohydrates play a major role in modulating this recognition process, an understanding of the structural and functional roles of glycoprotein and glycolipid in cellular biology may point the way toward controlling these abnormalities. However, little research has been done in this area, for two main reasons. First, research to date has focused on the protein and lipid portion of glycoprotein and glycolipid, rather than the glycoprotein and glycolipid themselves, because protein and lipid have been shown to be the functional molecules in the biological recognition system. Second, chemical synthesis of oligosaccharides is a difficult and time-consuming process. Professor

Nishimura's automated synthesizer technology offers the first successful method for practical, high-speed production of functional carbohydrates, glycoproteins and glycolipids for use as research materials, making it a powerful research tool.

Glycoscience is now regarded as a high-potential R&D field for post-genome biopharmaceutical drug discovery. Recent research clearly indicates that oligosaccharides carry out a variety of specific functions in cell-cell interactions. This new synthetic technology will enable both swift, practical analysis of carbohydrate sequences and high-speed production of bioactive glycoconjugates. Shionogi expects the technology acquired through this agreement to play a major role in developing functional protein-based pharmaceuticals.

[ For Further Information ]

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