



HOKKAIDO UNIVERSITY

Title	Human serum N-glycans as highly sensitive cancer biomarkers : Potential benefits and the risks [an abstract of dissertation and a summary of dissertation review]
Author(s)	Gebrehiwot, Abrha Gebreselema
Degree Grantor	北海道大学
Degree Name	博士(生命科学)
Dissertation Number	甲第13604号
Issue Date	2019-03-25
Doc URL	https://hdl.handle.net/2115/74474
Rights(URL)	https://creativecommons.org/licenses/by-nc-sa/4.0/
Type	doctoral thesis
File Information	Abrha_Gebreselema_Gebrehiwot_review.pdf, 審査の要旨



Doctoral Dissertation Evaluation Review

Degree requested Doctor of Life Science

Applicant's name Abrha Gebreselema Gebrehiwot

Examiner :

Chief examiner	Professor	Shin-Ichiro Nishimura
Associate examiner	Professor	Toshiaki Koda
Associate examiner	Professor	Hiroshi Hinou

Title of Doctoral Dissertation

Human serum *N*-glycans as highly sensitive cancer biomarkers: Potential benefits and the risks
(高感度がんマーカーとしてのヒト血清 *N*-グリカン：その潜在的な恩恵と危険性)

Results of Evaluation of the Doctoral Dissertation (Report)

In this study, the author performed a research on comprehensive human serum and immunoglobulin G *N*-glycomics of Ethiopian breast cancer patients and matched controls using glycoblotting assisted MALDI-TOF/MS- and HPLC-based quantitative analysis aiming at identifying non-invasive cancer biomarkers. Apart from addressing the glycosylation signatures of native black population for the first time, the study revealed novel glyco-biomarkers with marked overexpression and strong diagnostic ability specifically in early stage cancer patients. In another inter-ethnic serum *N*-glycomic study, informative results emphasized the substantial influence of ethnic difference in human serum *N*-glycome variation; the ignorance of which may provide unclear and imprecise conclusion of the diagnosis by using glycan-related disease biomarkers.

In conclusion, the author has shown the potential of *N*-glycans directly released from patient serum glycoproteins as non-invasive approach by identifying new and specific early stage cancer biomarkers, as well as the need to strictly consider ethnic matching in a population based glyco-biomarker discovery research to avoid inaccurate diagnosis. After submitting two manuscripts to different international journals, the author published the first paper focusing on inter-ethnic serum *N*-glycome variation and its influence on identified cancer glyco-biomarkers while the second paper is under review.

Therefore, we acknowledge that the author is qualified to be granted a Doctorate of Life Science from Hokkaido University.