（様式1）

公益社団法人日本栄養・食糧学会　研究業績

＜学　会　賞＞

1. 候補者

研究題目:(和)	食事要因による消化管機能の制御を介した代謝性疾患予防に関する栄養生理学的研究		
(英)	Nutritional and physiological study on the prevention of metabolic diseases through dietary regulation of intestinal digestive-absorptive functions.		
氏　　名:(和)	合田敏尚		
(英)	Toshinao Goda		
所属機関:(和)	静岡県立大学食品栄養科学部教授、学部長		
(英)	Professor/Dean, School of Food and Nutritional Sciences, University of Shizuoka		
学　　位:	保健学博士	最終学歴:	昭和 64 年3月東京大学大学院医学系研究科博士課程修了
専門分野	①○栄養生理学、②栄養生化学、③○分子栄養学、④○公衆栄養学、⑤臨床・病態栄養学、⑥食生態学、⑦調理科学、⑧食品化学・食品分析学、⑨食品機能学、⑩食品工学、⑪食品加工・流通・貯蔵学、⑫食品衛生・安全学、⑬生理学、⑭生化学、⑮分子生物学、⑯臨床医学（内科系）、⑰臨床医学（外科系）⑱その他		
履　　歴	昭和 59 年 4 月　米国アリゾナ大学医学部小児科 博士研究員 昭和 60 年 7 月　米国アリゾナ大学医学部小児科 助教授 昭和 62 年 4 月　静岡県立大学食品栄養科学部 助手 平成 11 年 4 月　静岡県立大学食品栄養科学部 助教授 平成 19 年 4 月　静岡県立大学食品栄養科学部 准教授 平成 19 年 12 月 静岡県立大学食品栄養科学部、同大学院生活健康科学研究科教授（栄養生理学研究室） 平成 23 年 4 月　静岡県立大学大学院生活健康科学研究科 研究科長 平成 24 年 4 月　静岡県立大学大学院食品栄養環境科学研究院研究院長、大学院薬食生命科学総合学府 副学府長 平成 25 年 4 月　静岡県立大学食品栄養科学部 学部長 平成 29 年 4 月　静岡県立大学副学長　（現在に至る。）		
会員番号:		入会年度:	昭和 54 年度

2. 研究業績要旨(1,000 字以内)

候補者は、これまで、食事要因による小腸消化吸収関連遺伝子の発現制御機構の解析に精力的に取り組み、食事中の糖質シグナルが、スクラーゼ・イソマルターゼ複合体、Na^+-グルコース共輸送体などの標的遺伝子を転写レベルで制御していること、また、この時に、遺伝子上流のプロモータ領域から転写領域までのきわめて広範な遺伝子領域でヒストンの修飾、すなわちヒストンコードの変化が起こっていることをはじめて実証した。これらの一連の研究により、遺伝子の転写制御には、核内受容体などによる遺伝子

発現の ON-OFF の切り替えという古典的な制御機構のほかに、栄養素シグナルによる転写伸長反応の速度の変化という新規の制御機構の存在を明らかにするなど、栄養科学分野におけるエピゲノム研究の進展に大きな貢献をしてきた。

候補者は、さらに、小腸を標的にした食後高血糖の抑制とその代謝性疾患リスクとの関連性に関するエビデンスを構築する基盤づくりをめざし、食後高血糖の履歴を反映するバイオマーカーの開発に取り組んできた。食後高血糖モデル動物における血糖上昇に伴う末梢血白血球遺伝子の発現変動の網羅的な解析により、食後高血糖の履歴は、一過性だけでなく慢性的にも、末梢血白血球における多様な炎症性サイトカインの遺伝子発現を変動させることを明らかにした。また、α-グルコシダーゼ阻害剤による糖質消化吸収の抑制・遅延は、自然発症２型糖尿病モデルにおいて、食後高血糖を抑制し、膵臓ランゲルハンス島の繊維化および糖尿病の発症・進展を抑制できることを明らかにした。２型糖尿病者や、健常者から境界領域者までの健診受診者を対象とした分子疫学研究により、IL-1β や TNFα などの末梢血白血球由来の炎症性サイトカインの血中濃度や血漿γ-GTP 値は、食後高血糖による代謝の撹乱の履歴を示す優れたバイオマーカーであることを明らかにした。さらに、血漿 ALT 値は、内臓脂肪の蓄積や肝臓におけるインスリン抵抗性との関連性が示され、今後の個人に対応した栄養管理への活用が期待されている。以上のように、本候補者は、分子栄養学から人間栄養学までの広範な領域で、糖質の消化吸収速度の制御や、それによる糖尿病等の代謝性疾患のリスク低減に関する研究に取組み、多くの成果を上げた。これらの成果は、JNSV 誌 38 報を含む 218 報の論文として、査読付学術雑誌に発表された。

3. 報文等リスト

（1） この研究に直接関連するもの（10 編以内）

1) Inoue, S., Honma, K., Mochizuki, K., Goda, T. Induction of histone H3K4 methylation at the promoter, enhancer, and transcribed regions of the Si and Sglt1 genes in rat jejunum in response to a high-starch/low-fat diet. *Nutrition,* 31: 366-372, 2015.

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2) Yamada, A., Honma, K., Mochizuki, K., Goda, T. Brd4 regulates fructose-inducible lipid accumulation-related genes in the mouse liver. *Metabolism,* 65: 1478-1488, 2016.

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(3) 過去 5 年間の本学会での活動状況
平成 22 年 5 月～平成 24 年 5 月　日本栄養・食糧学会 業務執行理事（庶務担当）
平成 24 年 5 月～平成 28 年 5 月　日本栄養・食糧学会 業務執行理事（会計担当）
平成 26 年 4 月～平成 28 年 3 月　日本栄養・食糧学会中部支部 支部長

(4) 特記事項
平成 5 年 5 月　日本栄養・食糧学会奨励賞
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