

Surgery and was involved in the experimental design of the Osaka discovery sample set, data analysis/interpretation and unblinding of data. HM was the head of surgery (for CRC population, Chiba) responsible for the patient enrolment and selection for the Chiba samples. FN was the group leader at Chiba overseeing the entire project, including protocol design and approvals, data analysis and unblinding. DBG was the President and CEO of Phenomenome Discoveries Inc, and oversaw most of the efforts at PDI, was integrally involved in the interpretation of MS/MS data, the development of FTICR methodology, the experimental designs and was also a significant contributor to the format and direction of the manuscript.

Competing interests

The following authors are full-time employees and have received salaries from Phenomenome Discoveries Inc, Saskatoon, Canada: Shawn A Ritchie, Pearson W K Ahiahonu, Dushmanthi Jayasinghe, Doug Heath, Jun Liu, Yingshen Lu, Wei Jin, Amir Kaviani, Yasuyo Yamazaki, Amin M. Khan, Mohammad Hossain, Khine Khine Su-Myat and Paul L Wood. Dayan B Goodenowe is the co-founder, President and CEO, of Phenomenome Discoveries, Inc. Only Dayan B Goodenowe owns shares in the company. Kevin Krenitsky, Ichiro Takemasa, Masakazu Miyake, Mitsugo Sekimoto, Morito Monden, Hisahiro Matsubara and Fumio Numura have no competing financial interests. None of the authors have non-financial competing interests. Phenomenome Discoveries Inc is financing the article processing fees for the manuscript. Shawn A Ritchie and Dayan B Goodenowe are named inventors on submitted patent applications relating to the discoveries disclosed within the manuscript and have both received a salary from Phenomenome Discoveries Inc (the organization named in the patents).

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