Introduction to Iron Works... The John Beard Memorial Symposium\(^1,2\)

Shannon L. Kelleher\(^3*\) and Jere D. Haas\(^4\)

\(^3\)Department of Nutritional Sciences, The Pennsylvania State University, University Park, PA 16801; and \(^4\)Division of Nutritional Sciences, Cornell University, Ithaca, NY 14833

Abstract

The Department of Nutritional Sciences at The Pennsylvania State University hosted a symposium entitled “Iron Works... The John Beard Memorial Symposium” in University Park, PA, on November 2, 2009. This one-day scientific symposium was held in honor of the late John Beard and was organized by Jere Haas, Shannon Kelleher, Terry Etherton, James Connor, and Gordon Jensen. The goal of the symposium was to discuss iron biology from a translational approach, encompassing molecular regulation, functional consequences of iron deficiency on neurophysiology and cognition through international and domestic interventions, and public health policy. Elizabeth Theil reviewed the biochemical regulation of iron homeostasis with a specific emphasis on ferritin, including its potential role as a dietary source of iron. James Connor discussed neuropsychological tests that, when coupled with imaging data, help identify brain regions that accumulate iron, which may be related to cognitive decline in the elderly. Betsy Lozoff shared her thoughts on effects of early iron deficiency on the brain and behavioral outcomes. Laura Murray-Kolb examined the functional consequences of iron deficiency in women of reproductive age. Rebecca Stoltzfus explored current interventions targeted at improving iron status in women and children in low-income countries. The scientific symposium closed with a discussion by Sean Lynch on the importance of understanding the effects of bioavailability on iron nutrition and the importance of integrating strategies to improve iron nutrition with other health measures, economic and social policies addressing poverty, as well as trade and agriculture. J. Nutr. doi: 10.3945/jn.110.131334.

The articles collected in this supplement to The Journal of Nutrition were presented at a symposium “Iron Works...” that honored the memory of John L. Beard, who died on February 13, 2009. John was a Distinguished Professor of Nutritional Sciences at The Pennsylvania State University. His research, teaching, and mentoring focused on the functional consequences of iron deficiency, a topic he pursued since studying for his Ph.D. in Nutrition at Cornell University in the late 1970s. Although John’s scholarship was extensive and covered the effects of iron on a wide range of physiological functions, he was most recognized for his pioneering research on the relationship between iron and brain function. He received numerous awards for his research and mentoring. Most recent and notable are the 2008 Kellogg Prize for International Nutrition Research from the ASN and the 2007 Pauline Schmitt Russell Distinguished Research Achievement Award from the College of Health and Human Development at Penn State. At the time of his untimely death, at age 62, John was President-Elect of the ASN. His contributions to the science of nutrition will endure through his extensive publications, the numerous students he mentored, and the endearing memory of a remarkable colleague and friend. The authors of the papers presented in this supplement represent collaborators and colleagues whose research in iron nutrition has made significant contributions to knowledge about iron metabolism and its role in neuroscience, cognitive function, and maternal and child nutrition. These were some of the many areas of research that John pursued during his distinguished academic career.

On November 2, 2009, approximately 150 students, colleagues, friends, associates, family members, and those interested in learning about iron biology spent the day at the Nittany Lion Inn on the campus of The Pennsylvania State University in University Park, PA, at a conference organized by Jere Haas,
Shannon Kelleher, Terry Etherton, James Connor, and Gordon Jensen. This one-day scientific symposium covered recent advances and the state of the science across the spectrum of translational iron biology from the molecular regulation of iron metabolism to the functional consequences of iron deficiency on neurophysiology and cognition to international and domestic interventions and public health policy. The conference began with a welcome from Gordon Jensen on behalf of the Department of Nutritional Sciences at Penn State and from Matthew Beard on behalf of the Beard family. Jere Haas opened the symposium with a brief overview of the breadth of the research in iron biology and disease in which John had been a pioneer. Each symposium speaker was introduced by a trainee that John had mentored through the years. Domingo Pinero, a former graduate student of John’s, introduced Elizabeth Theil, who presented an overview on the biochemical regulation of iron homeostasis with a specific emphasis on ferritin, including its potential role as a dietary source of iron in developing countries (1). Narishama Hegde, a Senior Scientist in John’s research group, introduced James Connor, who discussed neuropsychological tests that, when coupled with imaging data, help to identify the regions of the brain that accumulate too much iron and how that may relate to cognitive decline in the elderly (2). Erica Unger, a postdoctoral trainee in John’s research group, introduced Betsy Lozoff, who presented some intriguing data on the effects of early iron deficiency on the brain and behavioral outcomes (3). Sarah Rundle, John’s Research Assistant, introduced Laura Murray-Kolb, who reviewed the findings from studies that have examined the functional consequences of iron deficiency in women of reproductive age (4). Following lunch, the afternoon session opened with Laura Bianco, a postdoctoral trainee in John’s research group, who introduced Rebecca Stoltzfus. The topic of Rebecca’s presentation was current interventions to improve iron status in women and children in low-income countries using a life-cycle approach (5). The final symposium speaker, Sean Lynch, was introduced by Maggie Strable, a former undergraduate student who worked in John’s lab. Sean discussed the importance of understanding the effects of bioavailability on iron nutrition and the importance of integrating strategies to improve iron nutrition with other health measures, and economic and social policies addressing poverty as well as trade and agriculture (6). There was much lively discussion after each presentation and during the luncheon and numerous breaks. That would have certainly pleased John Beard very much, for he always found ways to engage researchers and students alike, forever encouraging, mentoring, and challenging both seasoned investigators and students just entering the field.

In the afternoon, Ann Crouter, Dean of the College of Health and Human Development, emceed the presentation of a number of awards given in honor of John to his wife Diane Brannon and his 2 sons, Matthew and Zachary. An award plaque was presented by James McClung on behalf of the U.S. Army Natick Labs for John’s key role in studies to improve iron status in women in the military. Mary Lee Watts from the ASN announced their contribution of 100 student memberships in ASN to be awarded in John’s name, and Domingo Pinero announced the renaming of the graduate student’s travel award in honor of John on behalf of the Penn State Alumni Association. Robert Cruciel, Director of Major Gifts in the College of Human Health and Development, announced the establishment of an endowment created in John’s name. It will support research and travel by graduate students, particularly those whose research involves iron nutrition, for conferences and professional development pursuits. Finally, the symposium was closed by Dean Crouter, who presented John’s family with the 25-year chair, awarded in recognition for 25 y of service to the university, John’s residence at Penn State fell just short of that milestone; he celebrated his 24th year as a member of the faculty before he passed away. As one will observe, the breadth of the following presentations clearly represents the translational breadth of John Beard. The symposium was a wonderful opportunity to remember what John loved to work on and to foreshadow where the vast field of iron biology is heading as it enters this new decade.

**Literature Cited**

6. Lynch S. The causes of nutritional iron deficiency were recognized over fifty years ago. Why is it still a worldwide problem? J Nutr. 2010;