

---

# BJN

## BRITISH JOURNAL OF NUTRITION

---

Volume: 123

---

Number: 3

---

14 February 2020

---

An International Journal  
of Nutritional Science

**British Journal of Nutrition**  
**An International Journal of Nutritional Science**  
*Volume 123, 2020 ISSN: 0007-1145*

**Aims and Scope**

The *British Journal of Nutrition* is an international, peer-reviewed journal publishing original papers, review articles, short communications and technical notes on human and clinical nutrition, animal nutrition and basic science as applied to nutrition. Correspondence is encouraged in a Nutrition Discussion Forum. The Journal recognizes the multidisciplinary nature of nutritional science and encourages the submission of material from all of the specialities involved in research and clinical practice. The Journal also publishes supplements on topics of particular interest.

The *British Journal of Nutrition* is published twice monthly by Cambridge University Press on behalf of  
 The Nutrition Society.

The *British Journal of Nutrition* is available online to subscribers at [journals.cambridge.org/bjn](http://journals.cambridge.org/bjn)

Tables of contents and abstracts are available free at the same website.

**Editor-in-Chief**

J Mathers, *Newcastle University, UK*

**Deputy Editors**

J J B Anderson, *University of North Carolina, USA*  
 A E Buyken, *University of Paderborn, Germany*  
 D J Hoffman, *RUTGERS- State University of New Jersey, USA*  
 K G Jackson, *University of Reading, UK*  
 D N McMurray, *Texas A&M University, USA*  
 A M Minihihi, *University of East Anglia, UK*  
 S D Proctor, *University of Alberta, Canada*  
 W D Rees, *Rowett Research Inst., UK*  
 E Rush, *Auckland University of Technology, New Zealand*  
 A J Sinclair, *Deakin University, Australia*  
 R Thompson, *World Cancer Research Fund International, UK*  
 D L Topping, *CSIRO, Australia*

**Reviews and Horizons Editor**

B A Fielding, *University of Surrey, UK*  
 S M Pasiakos, *USARIEM: US Army Research Inst. of Environmental Medicine, USA*

**Reviews Editors**

J P Lallès, *Institut National de la Recherche Agronomique, France*  
 G E Lobley, *Rowett Research Institute, UK*  
 S J Whiting, *University of Saskatchewan, Canada*

**Supplements Editor**

M McKinley, *Queens University, Belfast, UK*

**Statistics Editors**

Y Bai, *Duke University, USA*  
 S Barton, *University of Southampton, UK*  
 M Cockeran, *Northwest University, South Africa*  
 S Crozier, *University of Southampton, UK*  
 S Doi, *Australian National University, Australia*  
 M Heo, *Montefiore Medical Center, USA*  
 G Kelley, *West Virginia University, USA*  
 D Li, *Zhejiang University, China*  
 W Qiu, *Brigham & Women's Hospital, USA*  
 C Ritz, *University of Copenhagen, Denmark*  
 I Saunders, *CSIRO, Australia*  
 M Standl, *Helmholtz Centre Munich, German Research Center for Environmental Health, Germany*  
 R Woodman, *Flinders University, Australia*  
 B Yang, *Zhejiang University, China*  
 C Yuan, *Harvard School of Public Health, USA*

**Editorial Board**

U Alexy, <i>Rheinische Friedrich-Wilhelms University of Bonn, Germany</i>	K Erickson, <i>University of California: Davis, USA</i>	A Palou, <i>Universitat de les Illes Balears, Spain</i>
C Baldwin, <i>Kings College London, UK</i>	I Gabriel, <i>Institut National de la Recherche Agronomique, France</i>	E Petherick, <i>Bradford Royal Infirmary, UK</i>
J Baumgartner, <i>North West University, South Africa</i>	A-L Heath, <i>University of Otago, New Zealand</i>	LD Plank, <i>University of Auckland, New Zealand</i>
AM Beck, <i>Herlev University Hospital, Denmark</i>	T Hill, <i>Newcastle University, UK</i>	M Plourde, <i>University of Sherbrooke, Canada</i>
C Berr, <i>INSERM, France</i>	L T Ho, <i>Taipei Veterans General Hospital, Taiwan</i>	M Portillo, <i>University of the Basque Country, Spain</i>
J Beulens, <i>VU University Medical Center, The Netherlands</i>	M Kontogianni, <i>Harokopio University, Greece</i>	GK Pot, <i>Kings College London, UK</i>
F Bravi, <i>Università degli Studi di Milano, Italy</i>	SM Krebs-Smith, <i>NCI: National Cancer Inst., USA</i>	D Robertson, <i>University of Surrey, UK</i>
J T Brenna, <i>Cornell University, USA</i>	J Lapointe, <i>Agriculture and Agri-Food Canada, Canada</i>	S Sahni, <i>Harvard Medical School, USA</i>
J Cleal, <i>University of Southampton, UK</i>	L Lauritzen, <i>University of Copenhagen, Denmark</i>	U Schwab, <i>University of Eastern Finland, Finland</i>
K A Cockell, <i>Health Canada, Canada</i>	MJ Leaver, <i>University of Stirling, UK</i>	R Siddiqui, <i>Virginia State University, USA</i>
E Combet-Aspray, <i>University of Glasgow, UK</i>	D Levitsky, <i>Cornell University, USA</i>	L Smithers, <i>University of Adelaide, Australia</i>
C Damsgaard, <i>University of Copenhagen, Denmark</i>	J Lodge, <i>Northumbria University, UK</i>	A Sneddon, <i>Rowett Research Institute, UK</i>
K Deighton, <i>Leeds Beckett University, UK</i>	C Maloney, <i>University of New South Wales, Australia</i>	JL Soengas, <i>University of Vigo, Spain</i>
J H M de Vries, <i>Wageningen University, The Netherlands</i>	M A Martínez-González, <i>Clinica Universidad de Navarra, Spain</i>	C G Taylor, <i>University of Manitoba, Canada</i>
R N Dilger, <i>University of Illinois: Urbana-Champaign, USA</i>	V Mazurak, <i>University of Alberta, Canada</i>	MH Vickers, <i>University of Auckland, New Zealand</i>
E Doucet, <i>University of Ottawa, Canada</i>	B Muhlhäusler, <i>University of Adelaide, Australia</i>	R Waagbø, <i>NIFES: National Inst. of Nutrition and Seafood Research, Norway</i>
R Elango, <i>University of British Columbia, Canada</i>	K Murakami, <i>University of Tokyo, Japan</i>	NM Wade, <i>CSIRO, Australia</i>
		J Wang, <i>China Agricultural University, China</i>
		G Williamson, <i>University of Leeds, UK</i>

The Nutrition Society has as its objective the advancement of the scientific study of nutrition and its applications to the maintenance of human and animal health.

Application of membership is invited from anyone whose work has contributed to the scientific knowledge of nutrition, whether such work has been in the laboratory, the field or the clinic, and whether experimental, clinical, agricultural or statistical in nature. There is also a student membership scheme with reduced subscriptions.

Particulars of The Nutrition Society and application forms for membership are available from The Nutrition Society, 10 Cambridge Court, 210 Shepherds Bush Road, London W6 7NJ, UK. Tel: +44 (0)20 7602 0228, Fax: +44 (0)20 7602 1756, Email: [office@nutsoc.org.uk](mailto:office@nutsoc.org.uk)

The Nutrition Society Home Page is at <http://www.nutritionandsociety.org>

© Nutrition Society 2020