

twin research and human genetics

The official journal of the International Society for Twin Studies and the Human Genetics Society of Australasia

Covering all areas of
human genetics
with an emphasis on
twin studies, genetic
epidemiology, psychiatric
and behavioral genetics,
and research on
multiple births in the
fields of epidemiology,
genetics, endocrinology,
fetal pathology, obstetrics
and pediatrics.

Volume **23** Number **2**

April 2020

SPECIAL ISSUE

**Festschrift for Nick Martin on the
occasion of his 70th birthday**

Guest Editors

**David Evans, Sarah Medland,
Nathan Gillespie**

twin research and human genetics



The official journal of the
**International Society
for Twin Studies and the
Human Genetics Society
of Australasia**

Twin Research and Human Genetics is the official journal of the International Society for Twin Studies and, as such, is the successor journal to *Acta Geneticae Medicae et Gemellologiae*, which was founded in 1952 by Luigi Gedda. He edited it until its cessation in 1998, with Paolo Parisi as Acting Editor and then Executive Editor from 1968 to 1992. *Acta* became the official journal of ISTS when the society was established in 1974. The subtitle *Twin Research* was adopted in 1979. It was published by The Mendel Institute in Rome, except for the years 1979 to 1983, when it was published jointly with Alan R. Liss in New York.

Twin Research itself was founded in 1998 by Robert Derom, who edited it in 1998 and 1999. It has been edited by Nick Martin since 2000. It was published by Stockton Press (which became part of Nature Publishing Group) from 1998 to 2000, by Australian Academic Press from 2001 to 2012, and by Cambridge University Press since 2012.

The title *Twin Research and Human Genetics* was adopted from the beginning of Volume 8 in 2005 and is a translation of *Acta Geneticae Medicae et Gemellologiae*, Luigi Gedda's original title.

In 2008, *Twin Research and Human Genetics* was also adopted as the official journal of the Human Genetics Society of Australasia.

Editor

Nicholas G. Martin, *Brisbane*

Associate Editors

CLINICAL GENETICS
Petra Zwiijnenburg, *Amsterdam*

BEHAVIOR GENETICS
Dorret Boomsma, *Amsterdam*

EPIGENETICS
Jeff Craig, *Melbourne*

TWIN REGISTRIES
Yoon-Mi Hur, Jeonnam, *Seoul*

COMPLEX DISEASES
Jaakko Kaprio, *Helsinki*

ENDOCRINOLOGY
Cornelis Lambalk, *Amsterdam*

HUMAN GENETICS
Jozef Gecz, *Adelaide*

NEWS & VIEWS
Nancy Segal, *Fullerton, CA*

FETAL MEDICINE
Asma Khalil, *London*

PSYCHIATRIC GENETICS
Wendy Slutske, *Columbia, MO*

SOCIAL SCIENCES
Levente Littvay, *Budapest*

STATISTICAL MODELING
Michael Neale, *Richmond, VA*

Book Review Editor

Dorret Boomsma, *Amsterdam*
di.boomsma@psy.vu.nl

Editorial Board

Isaac Blickstein, *Rehovot*
Charles Boklage, *Greenville*
Danilo Buca, *Chieti*
Andreas Busjahn, *Berlin*
Kaare Christensen, *Odense*
Catherine Derom, *Leuven*
Lindon Eaves, *Richmond, Virginia*
David Evans, *Bristol*
Johan Fellman, *Helsinki*
Jack Goldberg, *Seattle*
Judith Hall, *Vancouver*
Jennifer Harris, *Oslo*
Yoko Imaizumi, *Suita City*
Kirsten Kyvik, *Odense*
Daniel Liang-Dar Hwang, *Brisbane*
Barbara Luke, *Miami*
Nancy Pedersen, *Stockholm*
Daniel Pérusse, *Montréal*
Robert Plomin, *London*
Danielle Posthuma, *Amsterdam*
Shaun Purcell, *Boston*
Roger Short, *Melbourne*
Tim Spector, *London*
Antonia Stazi, *Rome*
Martine Thomis, *Leuven*
Karen Thorpe, *Brisbane*
Mark Umstad, *Melbourne*

Subscription Rates 2020

Individual subscriptions to *Twin Research and Human Genetics* as members of the International Society for Twin Studies (ISTS) and the Human Genetics Society of Australasia (HGSA):

1 YEAR INDIVIDUAL SUBSCRIPTION
Full member AUD 180
Nonprofessional/
retired member AUD 140
Student member AUD 100

For those members who wish to receive a printed copy, an additional fee of AUD 120 may be paid.

ISTS membership application or renewal can be made online at <https://genepi.qimr.edu.au/ists/ists.cgi> Alternatively, the Word document is available upon inquiry from ISTS@qimrberghofer.edu.au

INSTITUTIONAL SUBSCRIPTION RATES

This journal is published 6 times per year. The institutional rates (excluding VAT) are:

<https://doi.org/10.1017/thg.2020.54> Published online by Cambridge University Press

	Electronic Only
N America	824 USD
UK and ROW	532 GBP

EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Prices include delivery by air when appropriate. Japanese prices for institutions are available from Kinokuniya Company Ltd, P.O. Box 55, Chitose, Tokyo 156, Japan.

Orders and subscription enquiries should be addressed to:

Cambridge University Press, Journals Fulfillment Department, UPH, Shaftesbury Road, Cambridge CB2 8BS, UK

Orders from N America should be addressed to:

Cambridge University Press, 1 Liberty Plaza, Floor 20, New York, NY 10006, USA

Twin Research and Human Genetics and all other Cambridge Journals can be found at cambridge.org/core

ISTS Website

www.ists.qimr.edu.au

Indexing/Abstracting

This journal is indexed in the following databases: MEDLINE/PubMed, EMBASE/Excerpta Medica, PsycINFO, Science Citation Index®, Journal Citation Reports/Science Edition, Science Citation Index Expanded® (available as the ISI Web of Science®), Current Contents®/Clinical Medicine, Current Contents®/Life Sciences

E-mail Address for Manuscript Submission

See inside back cover for author instructions.

Editorial Office

Nicholas G. Martin
Editor
Twin Research and Human Genetics
QIMR Berghofer Institute of Medical Research
Brisbane Qld 4029 Australia
E-mail: ISTS@qimrberghofer.edu.au

April 2020

The official journal of the **International Society for Twin Studies** and the **Human Genetics Society of Australasia**

Covering all areas of human genetics with an emphasis on twin studies, genetic epidemiology, psychiatric and behavioral genetics, and research on multiple births in the fields of epidemiology, genetics, endocrinology, fetal pathology, obstetrics and pediatrics.

Twin Research and Human Genetics is published six times annually and issued to all financial ordinary, institutional and student members of ISTS and HGSA.

Copyright in all articles rests with authors. A limited set of permanent copyright permission licences has been granted by authors to the publisher to allow publication in this journal. Rights in the reproduction and distribution of the published articles as visual facsimiles of this published edition by either mechanical or digital means is controlled by the publisher and any distributions by CAL for copying of an author's work are due to the publisher in the first instance. All other rights in the words contained in this edition are controlled by the authors. Authors are therefore free to adapt and/or republish the words making up their own articles either online or in print.

Published by Cambridge University Press on behalf of Australian Academic Press Pty Ltd. and the International Society of Twin Studies.
Cambridge University Press,
University Printing House
Shaftesbury Road
Cambridge CB2 8BS, UK
www.cambridge.org

Editorial

Editorial 67
David Evans, Sarah E. Medland and Nathan Gillespie

Articles

Birmingham and Beyond 68
Lindon Eaves

Nicholas Gordon Martin 72
Georgia Chenevix-Trench

The Genetics of Human DZ Twinning 74
Dorret I. Boomsma

Genetics of Biochemical Phenotypes 77
John B. Whitfield

Nick Martin and the 'Boulder Workshops' 80
John K. Hewitt

Recollections of Nick Martin: 1983-1986 82
Kenneth Kendler

Nicholas (Nick) G. Martin and the Extended Twin Model 84
Hermine H. Maes

Statistical Power and the Classical Twin Design 87
Pak C. Sham, Shaun M. Purcell, Stacey S. Cherny, Michael C. Neale and Benjamin M. Neale

Gene Discovery Using Twins 90
David Duffy, Rick Sturm, Gu Zhu and Stuart MacGregor

A Brief History of the Collaboration between Dr Nathan Gillespie and Professor Nick Martin Including Personal Reflections 94
Nathan A. Gillespie

It's in the Bloody Genes! 96
David M. Evans

Curly Questions 98
Sarah E. Medland

Want to Work on Asthma Genetics? 100
Manuel A. R. Ferreira

The Genetics of Reading and Language 101
Michelle Luciano and Timothy C. Bates

The Genetics of Endometriosis 103
Grant W. Montgomery

Migraine, Human Genetics and a Passion for Science 105
Dale R. Nyholt

Musings on Visscher et al. (2006) 107
Peter M. Visscher

Nick Martin and the Genetics of Depression: Sample Size, Sample Size, Sample Size 109
Enda M. Byrne, Anjali K. Henders, Ian B. Hickie, Christel M. Middeldorp and Naomi R. Wray

Nick Martin as a Mentor — A Perspective 112
Matthew C. Keller

(CONTINUED OVER)

contents

continued

Cohorts <i>Jaakko Kaprio and Dorret I. Boomsma</i>	114
Nick Martin's Contributions to Human Sexuality Research <i>Karin J. H. Verweij and Brendan P. Zietsch</i>	116
The SNP-Based Heritability — A Commentary on Yang et al. (2010) <i>Jian Yang</i>	118
The Barbarians Are at the Gate! <i>Pete Hatemi</i>	120
Do People with Lower IQ Have Weaker Taste Perception? A Hidden Supplementary Table in 'Is the Association Between Sweet and Bitter Perception Due to Genetic Variation?' <i>Liang-Dar Hwang</i>	123
Sociopolitical Attitudes Through the Lens of Behavioral Genetics: Contributions from Dr Nicholas Martin <i>Brad Verhulst</i>	125
Contributions of Nicholas Martin to Gambling Disorder Research <i>Wendy S. Slutske and Penelope A. Lind</i>	127
Cannabis Research <i>Eske Derks, Karin Verweij and Nathan Gillespie</i>	129
Nick Martin's Contribution to GxE Research <i>Lucía Colodro-Conde and Baptiste Couvy-Duchesne</i>	131
ANGI — Anorexia Nervosa Genetics Initiative <i>Cynthia Bulik, Martin Kennedy and Tracey Wade</i>	135
Nature via Nurture, the Martin Way <i>Hilary C. Martin</i>	137
News, Views and Comments	
Twins Reared Apart: Zygotic Division After Artificial Insemination/ Twin Research Reviews: Selective Resuscitation of Premature Twins; Scientist Jailed for Editing Twins' Genes; Sexual Arousal Patterns in MZ Twins Discordant for Sexual Orientation; MZ Twins With Jejuno-Ileal Atresia/Media Reports: Twin Girls' Search for a Bone Marrow Donor; Puppy with a Possible Parasitic Twin; Twins in Silicon Valley; Surgical Separation of Craniopagus Twins; Twin-Based <i>New Yorker Magazine</i> Cartoon; Twin Tragedies <i>Nancy L. Segal</i>	139