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Summary and concluding statement

Adam D. Tarnoki^a, David L. Tarnoki^a, Jennifer R. Harris^b, Nancy L. Segal^c

^a*Medical Imaging Centre, Semmelweis University, Hungarian Twin Registry, Budapest, Hungary*

^b*Centre for Fertility and Health, The Norwegian Institute of Public Health, Oslo, Norway*

^c*Department of Psychology, California State University, Fullerton, CA, United States*

In the introduction to this book, we noted that this is a very exciting time to be involved in the study of twins. It is also an exciting time to look to the future of twin research.

Important findings and breakthroughs are happening all the time. You have read about some of them in the different chapters of this book, but some stories are worth retelling—and when the history of twins is written again, even more chapters will be added.

Throughout the years, twin registries have grown to occupy a special niche in science, particularly because new technologies and analytical approaches have often enhanced the known advantages of twin designs. For example, epigenetic analyses are informing us about factors affecting behavior and disease in identical twins who differ with regards to environmental exposures, life-style factors, and/or medical life histories. Comparing the microbiomes of MZ (identical) and DZ (fraternal) twins also promises to uncover new and important findings regarding the onset and progression of human disease. Moreover, twin registries are valuable resources for helping us find answers to significant public health challenges. This is illustrated, for example, by the number of twins studies that could rapidly investigate various aspects of the coronavirus (COVID-19) pandemic and were featured in the 19th *International Congress on Twin Studies* that took place in Budapest in 2021.

Twin researchers have further enriched their data through the addition of new types of genetic, omics, imaging, and environmental measures. This has laid a strong foundation for new knowledge generation. We foresee that today's twin-based research programs will continue to grow and provide new opportunities in which twin research will contribute to breakthroughs across a wide field of scientific inquiry.

Twin registries are also growing in size, number and specificity, owing to increased twinning rates. Although we have described factors that increase the chance of DZ twinning, research on the causes of MZ twinning is still underway with promising results. We still have a great deal to learn about many aspects of twins and twinning, so it is not surprising that new twin registries are emerging in the world, and more investigators are implementing twin research designs into their research programs. Physicians are also better able to detect and manage multiple birth pregnancies which are generally riskier than singleton pregnancies, for both mothers and infants. In our modern, changing world, psychologists are also continually adapting

and developing new suggestions for parenting twins. Areas of special interest concern placing twins in the same or separate classrooms and identifying the best interventions for improving twins' average language difficulties. Communication between researchers and parents is also critical, representing a subject of renewed focus within the *International Society of Twin Studies*.

Beyond the scientific promise and progress of twin studies, meeting and observing twins up close and personally provides a unique and fascinating experience. Each twin pair reflects a distinctive story about human developmental processes. Think about the twins you know, and this will become clear.

In the future, twin studies will continue to play an important role, along with emerging genome and molecular research methods, in shedding light on answers to big questions. Findings from these studies will continue to elucidate the reasons why people differ in the ways they develop and age, identify factors affecting health and well-being, and explain how environmental and genetic factors combine to affect human behaviors, physical traits, and diseases.

Thank you for reading our book in which we shared current information with you on the current state of twin-based science. In closing, we hope that you have gained appreciation for the valuable contributions that twin research have made to our understanding of individual differences in health, disease, and development. If so, then our mission as editors has been accomplished. We thank the authors of the chapters, the experts who reviewed them, and the publisher Elsevier, who allowed us to share this information with you. Finally, we thank twins worldwide for their participation in research and for sharing their stories with us.

Appendix—Resources

Books by the editor, Nancy L. Segal

- Entwined Lives: Twins and What They Tell Us About Human Behavior. (2000).
Indivisible by Two: Lives of Extraordinary Twins. Cambridge, MA. (2007).
Someone Else's Twin: The True Story of Babies Switched at Birth. Books (2011).
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Accidental Brothers: The Story of Twins Exchanged at Birth and the Power of Nature and Nurture. (2018, co-author: Y.S. Montoya).
Deliberately Divided: Inside the Controversial Study of Twins and Triplets Adopted Apart. (2021).
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Journals and Magazines.

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Behavior Genetics.

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Professional Organizations.

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International Society for the Study of Individual Differences.

<https://fissid.org/>

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Multiples of America.

<https://multiplesofamerica.org/>

International Council of Multiple Birth Organizations (ICOMBO).

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Twins Days Festival.

[Twinsdays.org](http://twinsdays.org)

International Twins Association (ITA).

<http://www.intltwins.org/index.php/en/>

Twiniversity.

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Twin Mom. twinmom.com

Twin Loss Support Groups.

Twinless Twins. twinlesstwins.org

The Twins Trust Bereavement Support Group (BSG). twinstrust.org/bereavement.html

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TWIN RESEARCH FOR EVERYONE

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Edited by

Adam D. Tarnoki

Medical Imaging Centre, Semmelweis University, Hungarian
Twin Registry, Budapest, Hungary

David L. Tarnoki

Medical Imaging Centre, Semmelweis University, Hungarian
Twin Registry, Budapest, Hungary

Jennifer R. Harris

Centre for Fertility and Health, The Norwegian Institute of
Public Health, Oslo, Norway

Nancy L. Segal

Department of Psychology, California State University,
Fullerton, CA, United States



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Contributors

Catarina Almqvist

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden; Pediatric Allergy and Pulmonology Unit at Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden

Juko Ando

Keio University, Tokyo, Japan

Meike Bartels

Department of Biological Psychology, Faculty of Behavioural and Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam University Medical Centre, Amsterdam, The Netherlands

Munkh-Erdene Bayartai

The University of Sydney, Charles Perkins Centre, Sydney School of Health Sciences, Faculty of Medicine and Health

Christopher R. Beam

University of Southern California, Department of Psychology

Adriene M. Beltz

Department of Psychology, University of Michigan, MI, United States

Sheri A. Berenbaum

Department of Psychology, The Pennsylvania State University, University Park, PA, United States; Department of Pediatrics, The Pennsylvania State University, Hershey, PA, United States

Dorret I. Boomsma

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands; Amsterdam Reproduction and Development Research Institute, Amsterdam, The Netherlands

Isabell Brikell

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Sweden

Minh Bui

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Lucas Calais-Ferreira

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia; Centre for Adolescent Health, Murdoch Children's Research Institute, Melbourne, VIC, Australia

Kaare Christensen

The Danish Twin Registry, Department of Public Health, University of Southern Denmark, Odense, Denmark

Robin P. Corley

Institute for Behavioral Genetics, University of Colorado Boulder, CO, United States

Victoria K. Cortessis

Department of Population and Public Health Science, Keck School of Medicine, University of Southern California, Los Angeles, CA, United States; Department of Obstetrics & Gynecology, Keck School of Medicine, University of Southern California, Los Angeles, CA, United States

Wendy Cozen

Division of Hematology-Oncology, Department of Medicine, School of Medicine, University of California at Irvine, Orange, CA, United States; Department of Pathology, School of Medicine, University of California at Irvine, Orange, CA, United States; Chao Family Comprehensive Cancer Center, University of California at Irvine, Orange, CA, United States

Jeffrey M. Craig

Environmental & Genetic Epidemiology Research, Molecular Immunity, Royal Children's Hospital, Parkville, VIC, Australia; IMPACT Institute, School of Medicine, Deakin University, Geelong, VIC, Australia

Lisabeth Fisher DiLalla

Southern Illinois University School of Medicine

David L. DiLalla

Southern Illinois University Carbondale

Conor V. Dolan

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, and Amsterdam Public Health (APH), Amsterdam, The Netherlands

James G. Dowty

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Jeremy A. Elman

Department of Psychiatry, University of California San Diego; Center for Behavior Genetics of Aging, University of California San Diego

Vivienne F.C. Esser

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Paulo H. Ferreira

The University of Sydney, Charles Perkins Centre, Sydney School of Health Sciences, Faculty of Medicine and Health

Deborah Finkel

Department of Psychology, Indiana University Southeast, United States; Institute for Gerontology, School of Health and Welfare, Jönköping University, Sweden

Irene Giardina

Department of Obstetrics and Gynecology, Centre of Perinatal and Reproductive, Medicine, University of Perugia, Italy

Fiona A. Hagenbeek

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands

Irén Haltrich

2nd Department of Pediatrics, Semmelweis University, Budapest, Hungary

Aino Heikkinen

Institute for Molecular Medicine Finland FIMM, HiLIFE, University of Helsinki, Helsinki, Finland

John L. Hopper

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Jouke-Jan Hottenga

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, and Amsterdam Public Health (APH), Amsterdam, The Netherlands

Yoon-Mi Hur

College of General Education, Kookmin University, Seoul, South Korea

Matthew R. Jamnik

Southern Illinois University Carbondale

Kaushalya Jayaweera

Institute for Research & Development in Health & Social Care

Jaakko Kaprio

Institute for Molecular Medicine FIMM, University of Helsinki, Helsinki, Finland

Alice J. Kim

University of Southern California, Department of Psychology

Esther Lam

Division of Hematology-Oncology, Department of Medicine, School of Medicine, University of California at Irvine, Orange, CA, United States; Chao Family Comprehensive Cancer Center, University of California at Irvine, Orange, CA, United States

Henrik Larsson

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Sweden; School of Medical Sciences, Örebro University, Sweden

Soo Ji Lee

Genome and Health Big Data Lab, Graduate School of Public Health, Seoul National University, Seoul, Korea; Institute of Health and Environment, Seoul National University, Seoul, Korea

Anna Lengyel

2nd Department of Pediatrics, Semmelweis University, Budapest, Hungary

Shuai Li

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Paul Lichtenstein

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden

Levente Littvay

Central European University

John C. Loehlin

University of Texas at Austin, Department of Psychology, Austin, TX, USA

Yuk Jing Loke

Environmental & Genetic Epidemiology Research, Molecular Immunity, Royal Children's Hospital, Parkville, VIC, Australia

Sara Lundgren

Institute for Molecular Medicine Finland FIMM, HiLIFE, University of Helsinki, Helsinki, Finland

Thomas M. Mack

Department of Population and Public Health Science, Keck School of Medicine, University of Southern California, Los Angeles, CA, United States

Sue Malta

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Riley L. Marshall

Southern Illinois University Carbondale

Nicholas G. Martin

Genetic Epidemiology Group, QIMR Berghofer Medical Research Institute, Brisbane, QLD, Australia

Matt McGue

The Danish Twin Registry, Department of Public Health, University of Southern Denmark, Odense, Denmark; Department of Psychology, University of Minnesota, Minneapolis, MN, United States

Sarah E. Medland

Mental Health & Neuroscience Department, QIMR Berghofer Medical Research Institute, QLD, Australia

Brittany L. Mitchell

Mental Health & Neuroscience Department, QIMR Berghofer Medical Research Institute, QLD, Australia

Elena Cristina Mitrea

Lucian Blaga University of Sibiu

Namitha Mohandas

Environmental & Genetic Epidemiology Research, Molecular Immunity, Royal Children's Hospital, Parkville, VIC, Australia; Department of Paediatrics, University of Melbourne, Parkville, VIC, Australia; IMPACT Institute, School of Medicine, Deakin University, Geelong, VIC, Australia

José J. Morosoli

Mental Health & Neuroscience Department, QIMR Berghofer Medical Research Institute, QLD, Australia

Julia Métneki

Retired, Twin Researcher, Foundation of Hungarian Twin Registry; Hungarian Twin Registry, Budapest, Hungary

Tuong L. Nguyen

Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Parkville, VIC, Australia

Francisca J. Niculae

Department of Psychology, California State University, Fullerton, CA, United States

Veronika Odintsova

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, and Amsterdam Public Health (APH), Amsterdam, The Netherlands; National Medical Research Center for Obstetrics, Gynecology and Perinatology named after Academician V.I.Kulakov of Ministry of Healthcare of the Russian Federation, Moscow, Russia

Miina Ollikainen

Institute for Molecular Medicine Finland FIMM, HiLIFE, University of Helsinki, Helsinki, Finland

Juan R. Ordoñana

Department of Human Anatomy and Psychobiology, University of Murcia, Murcia Institute for BioHealth Research (IMIB-Arrixaca-UMU), Murcia, Spain

Emily Pali

Southern Illinois University Carbondale

Matthew S. Panizzon

Department of Psychiatry, University of California San Diego; Center for Behavior Genetics of Aging, University of California San Diego

Hang A. Park

Genome and Health Big Data Lab, Graduate School of Public Health, Seoul National University, Seoul, Korea; Department of Emergency Medicine, Hallym University Dongtan Sacred Heart Hospital, Hwaseong-si, Korea

Nancy L. Pedersen

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Sweden; Department of Psychology, University of Southern California, United States

Holly T. Pham

Department of Psychology, The Pennsylvania State University, University Park, PA, United States

Tinca J.C. Polderman

Amsterdam UMC, Vrije Universiteit Amsterdam, Child and Adolescent, Psychiatry & Psychosocial Care, Amsterdam Public Health; Vrije Universiteit Amsterdam, Clinical and Developmental Psychology, Amsterdam, The Netherlands

René Pool

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands

András Pári

Pázmány Péter Catholic University (PPKE), Maria Kopp Institute for Demography and Families (KINCS), Budapest, Hungary

Monica Rankin

International Council of Multiple Birth Organisations (ICOMBO)

Gian Carlo Di Renzo

Department of Obstetrics and Gynecology, Centre of Perinatal and Reproductive, Medicine, University of Perugia, Italy

Chandra A. Reynolds

Department of Psychology, University of California – Riverside, United States

Maryam Salehi

Division of Hematology-Oncology, Department of Medicine, School of Medicine, University of California at Irvine, Orange, CA, United States; Chao Family Comprehensive Cancer Center, University of California at Irvine, Orange, CA, United States

Nancy L. Segal

California State University, Fullerton and Director of the Twin Studies Center, CA, USA; Department of Psychology, California State University, Fullerton, CA, United States

Karri Silventoinen

Population Research Unit, Faculty of Social Sciences, University of Helsinki, Helsinki, Finland

P. Eline Slagboom

Leiden University Medical Centre, Leiden, The Netherlands

Gary Steinman

Department of Obstetrics & Gynecology, Hadassah Hospital—Hebrew University, Jerusalem, Israel

Garth Stephenson

IMPACT Institute, School of Medicine, Deakin University, Geelong, VIC, Australia

Athula Sumathipala

Institute for Research & Development in Health & Social Care; School of Medicine, Faculty of Medicine & Health Sciences, Keele University

Joonho Sung

Genome and Health Big Data Lab, Graduate School of Public Health, Seoul National University, Seoul, Korea; Institute of Health and Environment, Seoul National University, Seoul, Korea

Carole Tafforin

Ethospace, Research and Study Group in Human and Space Ethology, Toulouse, France

Adam D. Tarnoki

Medical Imaging Centre, Semmelweis University, Hungarian Twin Registry, Budapest, Hungary

David L. Tarnoki

Medical Imaging Centre, Semmelweis University, Hungarian Twin Registry, Budapest, Hungary

Valentina Tosto

Department of Obstetrics and Gynecology, Centre of Perinatal and Reproductive, Medicine, University of Perugia, Italy; Department of Obstetrics and Gynecology, Giannina Gaslini Children's Hospital, Genova, Italy

Valentina Tsibizova

Almazov State Perinatal Research Centre, St Petersburg, Russia

Peter Varjassy

Retired, Chief Physician, Medical Historian

Eero Vuoksima

Institute for Molecular Medicine Finland, University of Helsinki, Finland

Gonneke Willemsen

Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands

Yen Ting Wong

IMPACT Institute, School of Medicine, Deakin University, Geelong, VIC, Australia

Eco de Geus

Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands

Lianne P. de Vries

Department of Biological Psychology, Faculty of Behavioural and Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam University Medical Centre, Amsterdam, The Netherlands

Jenny van Dongen

Netherlands Twin Register, Department of Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam, The Netherlands; Amsterdam Reproduction and Development Research Institute, Amsterdam, The Netherlands

Margot P. van de Weijer

Department of Biological Psychology, Faculty of Behavioural and Movement Sciences, Vrije Universiteit, Amsterdam, The Netherlands; Amsterdam Public Health Research Institute, Amsterdam University Medical Centre, Amsterdam, The Netherlands

Editor Biographies

Dr Adam D. Tarnoki is an assistant professor, radiologist, and twin researcher at Semmelweis University Medical Imaging Center and Department Head, Department of Radiology at National Institute of Oncology, Budapest, Hungary. He is a founding member of the Hungarian Twin Registry. He has presented more than 200 international lectures and has authored over 150 publications. He is a board member of the Hungarian Society of Radiologists and teaches radiology in English, German, and Hungarian at Semmelweis University. Dr. Tarnoki serves as vice-president of the Hungarian Medical Association of America Hungary Chapter. He has also served as a member of the local organizing committee and Faculty of the 3rd World Congress on Twin Pregnancy and the 15th Congress of the International Society for Twin Studies (ISTS) in Budapest, Hungary, 2014, and the local host of the 19th International Congress on Twin Studies hold online in November 2021. He serves as deputy editor-in-chief of the *Hungarian Radiology Journal*, and he is the president of the International Society of Twin Studies (ISTS) since 2022.

Dr David L. Tarnoki is an assistant professor, radiologist, and twin researcher at Semmelweis University Medical Imaging Center and Head of Oncologic Imaging Diagnostic Center, National Institute of Oncology, Budapest, Hungary. He is a founding member of the Hungarian Twin Registry and has presented more than 200 international lectures and authored over 150 publications. He is the board member of the Hungarian Society of Radiologists and teaches radiology in English, German, and Hungarian at Semmelweis University. Dr. Tarnoki serves as secretary of the Hungarian Medical Association of America Hungary Chapter and is a member of the Academy of Young Researchers, Hungarian Academy of Sciences. He has also served as a member of the local organizing committee and Faculty of the 3rd World Congress on Twin Pregnancy and the 15th Congress of the International Society for Twin Studies (ISTS) in Budapest, Hungary, 2014, and the local host of the 19th International Congress on Twin Studies hold online in November 2021. He is the secretary of the International Society of Twin Studies (ISTS) since 2022.

Dr Jennifer R. Harris is currently a research director at the Centre for Fertility and Health at the Norwegian Institute of Public Health in Oslo, Norway. She has interdisciplinary training in life-span development and genetics. She has been conducting twin research throughout her academic career. She is the past president of the International Society for Twin Studies, a recipient of the James Shields Award for outstanding research in behavioral genetics, and is the scientific director of the Norwegian Twin Registry. Dr. Harris has a broad commitment to the wider scientific community and serves on several expert panels, boards, steering groups, scientific advisory committees, and editorial boards.

Dr Nancy L. Segal is currently a professor of psychology at California State University, Fullerton, and Director of the Twin Studies Center. She has authored over 250 scientific articles and book chapters, as well as seven books on twins, most recently, *Deliberately Divided: Inside the Controversial Study of Twins and Triplets Adopted Apart*. Her 2012 book, *Born Together-Reared Apart: The Landmark Minnesota Twin Study*, won the 2013 William James Award from the American Psychological Association. Dr. Segal has received several international awards including the James Shields Award for Lifetime Contributions to Twin Research (International Society for Twin Studies) and the International Making a Difference Award (Multiple Births Canada). She is also the 2016 recipient of the prestigious Wang Family Excellence Award from California State University. Dr. Segal has contributed to national and international media, including the New York Times and the Washington Post. She has been a frequent guest on national and international television and radio programs, such as the Today Show, Good Morning America, The Martha Stewart Show, the Oprah Winfrey Show, The Forum (BBC), and the Hidden Brain National Public Radio.