



# Epigenetics in Psychiatry

Edited by

Jacob Peedicayil

Dennis R. Grayson

Dimitrios Avramopoulos



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**Jacob Peedicayil**

Department of Pharmacology and Clinical Pharmacology  
Christian Medical College, Vellore, India

**Dennis R. Grayson**

Department of Psychiatry, College of Medicine,  
University of Illinois, Chicago, USA

**Dimitrios Avramopoulos**

McKusick–Nathans Institute of Genetic Medicine,  
Johns Hopkins University School of Medicine,  
Baltimore, USA



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# Epigenetics in Psychiatry



# Preface

Epigenetics, which literally means above or in addition to genetics, is a neologism that was coined in the 1940s by the British scientist Conrad H. Waddington, combining the words epigenesis (embryonic development) and genetics. Epigenetics has been an active area of research in biomedicine for the past few decades, and in the last decade has become an active area of research in psychiatry.

This book summarizes the findings of research on epigenetics in psychiatry to date. As is evident from many of the chapters of the book, we are presently in the very early stages of this sub-speciality of psychiatry. Although epigenetics holds great promise in illuminating the causes of psychiatric disorders and improving the clinical management of patients with these disorders, there is a long way to go before epigenetics achieves these goals. We hope that this book will help move the subject of epigenetics in psychiatry forward in order for these goals to be achieved.

This book has been written by an international team of experts whom we thank for their excellent contributions. As far as was possible we tried to make sure that there was a common thread running through the book: the correlation of epigenetics in psychiatry with genetics, transcriptomics, and proteomics. The book is comprehensive in its coverage of the subject and is likely to be of interest and use to a wide readership including students and residents in psychiatry, clinical psychiatrists, laboratory researchers, and workers in the pharmaceutical industry dealing with psychotropic drugs. We would like to thank those at Elsevier for their help. In particular we wish to thank Graham Nisbet for his efforts in initiating the writing of the book and Catherine (Cassie) Van Der Laan for her efforts in bringing the book to completion.

**Jacob Peedicayil**, Vellore, India

**Dennis R. Grayson**, Chicago, USA

**Dimitrios Avramopoulos**, Baltimore, USA



# About the Editors

**Dr Jacob Peedicayil** completed his MBBS in 1984 and MD in pharmacology in 1991, both at the Christian Medical College, Vellore, India. From 1993 to 1995 he did a Post-Doctoral Fellowship at the Centre for Cellular and Molecular Biology, Hyderabad. From 1995 to 1998 he worked as a Research Fellow in the Department of Neurological Sciences, Christian Medical College, Vellore. Since 1998 he has been on the faculty of the Department of Pharmacology and Clinical Pharmacology, Christian Medical College, Vellore, becoming a professor in 2007. He does theoretical research on epigenetics, focusing on epigenetics in psychiatry. In addition, he is involved in experimental research in smooth muscle pharmacology.

**Dr Dennis R. Grayson** has been interested in mechanisms associated with gene expression for over 35 years. He joined the laboratory of Dr James E. Darnell at the Rockefeller University in 1984 to study cell-type specific transcription factors and their interaction with promoters and enhancers. In 1988, Dr Grayson joined the Fidia-Georgetown Institute for the Neurosciences to study gene expression programs in neurons and continued this research program at Allegheny Singer Research Institute in Pittsburgh from 1994 to 1998. He continued his interests in psychiatry and joined the Psychiatric Institute in 1998. This represented a unique opportunity to pursue the molecular underpinnings of schizophrenia. Dr Grayson has received NRSA post-doctoral support, R01 and K04 funding from the National Institutes of Health to support his work. He has published over 100 papers in peer-reviewed journals and is regularly invited to speak at numerous national and international meetings.

**Dr Dimitrios Avramopoulos** received his MD from the University of Athens, Greece and his PhD from the University of Crete for his work on mapping human genes on chromosome 21 and deciphering the origin of chromosomal non-disjunction in trisomy 21, mentored by Dr Stylianos Antonarakis. He undertook his post-doctoral work at Johns Hopkins University where he became a faculty member in the Department of Psychiatry in 2002. He is currently on the faculty of the Institute of Genetic Medicine and the Department of Psychiatry at Johns Hopkins University where he works on the genetics of psychiatric disorders. He is interested in the identification of disease causing variants in the genome and the mechanisms through which they affect the brain, individually or in combinations, through the disruption of functional networks and the regulation of the corresponding genes.





# List of Contributors

**Hamid Mostafavi Abdolmaleky**

Department of Medicine & Department of Genetics and Genomics,  
Boston University School of Medicine, Boston, Massachusetts, USA

**Alexander Ambrosini**

University of Pennsylvania, Philadelphia, Pennsylvania, USA

**Dimitrios Avramopoulos**

McKusick–Nathans Institute of Genetic Medicine, The Johns Hopkins University School of  
Medicine, Baltimore, Maryland

**Nathalie G. Bérubé**

Departments of Paediatrics and Biochemistry, Schulich School of Medicine and Dentistry,  
University of Western Ontario, London, Canada; Children's Health Research Institute, London,  
Canada

**Carolyn Bernacki**

Rowan College of Medicine, Stratford, New Jersey, USA

**Natalie J. Beveridge**

John Curtin School of Medical Research, ANU College of Medicine, Biology, and Environment,  
The Australian National University, Canberra, Australia

**Unis Ahmad Bhat**

CSIR–Centre for Cellular and Molecular Biology, Hyderabad, India

**Marco P.M. Boks**

Brain Center Rudolf Magnus, Department of Psychiatry, University Medical Center Utrecht,  
Utrecht, The Netherlands

**Charles Bongiorno**

Jefferson Medical College, Philadelphia, Pennsylvania, USA

**Angela Bustamante**

Center for Molecular Medicine and Genetics, Wayne State University School of Medicine, Detroit,  
Michigan, USA

**Sumana Chakravarty**

CSIR–Indian Institute of Chemical Technology, Hyderabad, India

**Fabio Coppedè**

Department of Translational Research and New Technologies in Medicine and Surgery, Division  
of Medical Genetics, University of Pisa, Pisa, Italy

**Erbo Dong**

Department of Psychiatry, College of Medicine, University of Illinois, Chicago, Illinois, USA

**Josephine Elia**

A.I. duPont Hospital for Children, Wilmington, Delaware, USA

**Tamara Brook Franklin**

Gross Laboratory, European Molecular Biology Laboratory Monterotondo, Monterotondo, Italy

**Dennis R. Grayson**

Department of Psychiatry, College of Medicine, University of Illinois, Chicago, Illinois, USA

**Andrea L. Gropman**

Neurogenetics and Neurodevelopmental Pediatrics, Children's National Medical Center and George Washington University of the Health Sciences, Washington, DC, USA

**Alessandro Guidotti**

Department of Psychiatry, College of Medicine, University of Illinois, Chicago, Illinois, USA

**Praveer Gupta**

PAHL Nanobiotherapeutics Pvt. Ltd., IKP Knowledge Park, Hyderabad, India

**Hakon Hakonarson**

Children's Hospital of Philadelphia, University of Pennsylvania, Philadelphia, Pennsylvania, USA

**Benjamin Hing**

Department of Psychiatry, University of Iowa Carver College of Medicine, Iowa City, Iowa, USA

**Richard G. Hunter**

Department of Psychology, Developmental and Brain Sciences, University of Massachusetts, Boston, Massachusetts, USA

**Takuya Imamura**

Department of Stem Cell Biology and Medicine, Graduate School of Medical Sciences, Kyushu University, Maidashi, Higashi-ku, Fukuoka, Japan

**Zachary A. Kaminsky**

The Mood Disorders Center, Department of Psychiatry and Behavioral Sciences, The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

**Richard Kingsley**

A.I. duPont Hospital for Children, Wilmington, Delaware, USA

**Jamie M. Kramer**

Department of Biology, University of Western Ontario, London, Canada; Department of Physiology and Pharmacology, Schulich School of Medicine and Dentistry, University of Western Ontario, London, Canada

**Arvind Kumar**

CSIR–Centre for Cellular and Molecular Biology, Hyderabad, India

**Marija Kundakovic**

Department of Psychology, Columbia University, New York, New York, USA

**Benoit Labonté**

Icahn School of Medicine at Mount Sinai, Fishberg Department of Neuroscience, New York, New York, USA

**Richard Lee**

Department of Psychiatry, The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

**Pierre-Eric Lutz**

McGill Group for Suicide Studies, Douglas Mental Health University Institute, Montreal, Quebec, Canada

**Hari Manev**

The Psychiatric Institute, Department of Psychiatry, University of Illinois at Chicago, Chicago, Illinois, USA

**Stephanie Matt**

Department of Psychology, University of Delaware, Newark, Delaware, USA

**Ian Maze**

Laboratory of Chromatin Biology and Epigenetics, The Rockefeller University, New York, New York, USA

**Patrick O. McGowan**

Centre for Environmental Epigenetics and Development, Department of Biological Sciences, University of Toronto, Ontario, Canada

**Chris Murgatroyd**

School of Healthcare Science, Manchester Metropolitan University, Manchester, United Kingdom

**Kinichi Nakashima**

Department of Stem Cell Biology and Medicine, Graduate School of Medical Sciences, Kyushu University, Maidashi, Higashi-ku, Fukuoka, Japan

**Makiko Okuyama**

National Center for Child Health and Development, Tokyo, Japan

**Bidisha Paul**

Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama, USA

**Jacob Peedicayil**

Department of Pharmacology and Clinical Pharmacology, Christian Medical College, Vellore, India

**James B. Potash**

Department of Psychiatry, University of Iowa Carver College of Medicine, Iowa City, Iowa, USA

**R Gajendra Reddy**

CSIR–Indian Institute of Chemical Technology, Hyderabad, India

**Eric D. Roth**

Department of Psychology, University of Delaware, Newark, Delaware, USA

**Tania L. Roth**

Department of Psychology, University of Delaware, Newark, Delaware, USA

**Aya Sasaki**

Centre for Environmental Epigenetics and Development, Department of Biological Sciences, University of Toronto, Ontario, Canada

**Sarah Adams Schoenrock**

Department of Psychiatry, School of Medicine & Neurobiology Curriculum, University of North Carolina, Chapel Hill, North Carolina, USA

**Gen Shinozaki**

Department of Psychiatry, University of Iowa Carver College of Medicine, Iowa City, Iowa, USA

**Lisa M. Tarantino**

Department of Psychiatry, School of Medicine & Division of Pharmacotherapy and Experimental Therapeutics and Institute for Pharmacogenomics and Individualized Therapies, Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, North Carolina, USA

**Sam Thiagalingam**

Department of Medicine, Biomedical Genetics Section & Department of Genetics and Genomics & Department of Pathology and Laboratory Medicine, Boston University School of Medicine, Boston, Massachusetts, USA

**Trygve O. Tollefsbol**

Department of Biology, Comprehensive Center for Healthy Aging, Comprehensive Cancer Center, Nutrition Obesity Research Center, Comprehensive Diabetes Center, University of Alabama at Birmingham, Birmingham, Alabama, USA

**Satoshi Toyokawa**

Department of Health Policy, School of Public Health, The University of Tokyo, Japan

**Gustavo Turecki**

McGill Group for Suicide Studies, Douglas Mental Health University Institute, Montreal, Quebec, Canada

**Monica Uddin**

Center for Molecular Medicine and Genetics, Wayne State University School of Medicine, Detroit, Michigan; Department of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, Michigan, USA

**Masahiro Uesaka**

Department of Biophysics, Division of Biological Sciences, Graduate School of Science, Kyoto University, Kitashirakawa-Oiwake, Sakyo-ku, Kyoto, Japan; Department of Stem Cell Biology and Medicine, Graduate School of Medical Sciences, Kyushu University, Maidashi, Higashi-ku, Fukuoka, Japan

**Wendy Wenderski**

Laboratory of Chromatin Biology and Epigenetics, The Rockefeller University, New York, New York, USA

**Naoki Yamamoto**

Department of Biophysics, Division of Biological Sciences, Graduate School of Science, Kyoto University, Kitashirakawa-Oiwake, Sakyo-ku, Kyoto, Japan; Department of Stem Cell Biology and Medicine, Graduate School of Medical Sciences, Kyushu University, Maidashi, Higashi-ku, Fukuoka, Japan

**Oliver Yost**

A.I. duPont Hospital for Children, Wilmington, Delaware, USA

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