

## The Autistic Brain

Behavioral and Electrophysiological Characterization of Induced Neural Plasticity in the Autistic Brain.

The book covers some of the key research developments in autism and brings together the current state of evidence on the neurobiologic understanding of this intriguing disorder. The pathogenetic mechanisms are explored by contributors from diverse perspectives including genetics, neuroimaging, neuroanatomy, neurophysiology, neurochemistry, neuroimmunology, neuroendocrinology, functional organization of the brain and clinical applications from the role of diet to vaccines. It is hoped that understanding these interconnected neurobiological systems, the programming of which is genetically modulated during neurodevelopment and mediated through a range of neuropeptides and interacting neurotransmitter systems, would no doubt assist in developing interventions that accommodate the way the brains of individuals with autism function. In keeping with the multimodal and diverse origins of the disorder, a wide range of topics is covered and these include genetic underpinnings and environmental modulation leading to epigenetic changes in the aetiology; neural substrates, potential biomarkers and endophenotypes that underlie clinical characteristics; as well as neurochemical pathways and pathophysiological mechanisms that pave the way for therapeutic interventions.

Temple Grandin may be the most famous person with autism, a condition that affects 1 in 88 children. Since her birth in 1947, our understanding of it has undergone a great transformation, leading to more hope than ever before that we may finally learn the causes of and treatments for autism. Weaving her own experience with remarkable new discoveries, Grandin introduces the advances in neuroimaging and genetic research that link brain science to behavior, even sharing her own brain scan to show which anomalies might explain common symptoms. Most excitingly, she argues that raising and educating kids on the autism spectrum must focus on their long-overlooked strengths to foster their unique contributions. The Autistic Brain brings Grandin's singular perspective into the heart of the autism revolution.

In the autistic brain, the brain reduced connectivity, known as hypoconnectivity, allows weakly connected regions to drift apart, with sulci forming between them." Research has shown the deeper these sulcal pits are, the more language production is affected.

A new edition of Simon Baron-Cohen's highly successful Autism: The Facts, updated to cover the important subgroup of patients with Asperger syndrome. Written first and foremost as a guide for parents, but required reading for interested professionals, it covers the recognition and diagnosis of these conditions, their biological and physiological causes, and the various treatments and educational techniques available. It presents the facts, allowing the reader to take an informed position about the condition.

In this controversial new book, Lathe contends that the recent rise in cases of autism spectrum disorders--ASDs--is a result of increased exposure to environmental toxicity combined with genetic predisposition.

By reading this book you'll gain a greater understanding of the spectrum of Autism, and how different types could manifest within a person. Whilst Autism is not something to be cured, how it is managed and thought about can make such a difference in the lives of anyone connected to autism spectrum disorders. Learning how to identify and respond favorably to those with a disorder, will allow you to feel more connected to them, you'll have a better understanding of why they are doing what they are doing and acting the way they are. This book may give you: Autistic Individual Lacks A Theory Of Mind: Quick Guide To What Autism Spectrum Disorder Is Autism Spectrum Disorders: Signs And Symptoms Of Autism Spectrum Levels Of Autism Spectrum Tests: Leading Autism Spectrum Treatment Options

For years, the typical presentation of autism—the developmental delays, the social and linguistic deficits—has been well known. Despite great variation among children with this condition, certain symptoms are considered hallmarks of the disorder. Less understood is why these symptoms come together to construct autism. And as autism rates continue to rise, this information is ever more vital to accurate diagnosis and treatment. Autism and the Brain offers answers by showing a new neuropsychology of the autistic spectrum, reviewing general brain organization, and relating specific regions and structures to specific clinical symptoms. The author identifies deficiencies in areas of the left-hemisphere associated with the self and identity as central to autism. From this primary damage, the brain further reorganizes to compensate, explaining the diverse behaviors among low- and high-functioning individuals as well as autistic savants. The result is a unique three-dimensional view of brain structure, function, and pathology, with in-depth focus on how the autistic brain: Perceives the world.

Understands and uses words. Perceives faces. Understands spatial relations and numbers. Understands feelings and registers emotions. Perceives the self as separate from others. Acts in the world. Challenging readers to re-think their assumptions, Autism and the Brain is breakthrough reading for researchers, clinicians, and graduate students in fields as varied as child and adolescent psychiatry; clinical child, school, and developmental psychology; neuroscience/neurobiology; special education and educational psychology; social work; communication disorders; and public health and policy.

'The author of this excellent new book states in the preface that she intended to "provide an account of autism that people with little or no specialist knowledge will find comprehensible and digestible, but which at the same time offers more advanced readers a clear summary of existing knowledge". In my opinion, she has achieved her stated goal, in a most impressive volume which does justice to the complexity of the subject covered, without being over-long or alienating the less knowledgeable reader. This is no mean feat, as the book covers topics as disparate as the potential genetic cause of autism and the principle of inclusive care as applied to people with autism. The result is a handbook which I would have no hesitation in recommending to an intelligent parent of a child with autism, a teacher, and undergraduate student or a clinical trainee. In fact, I feel that this book has something to offer even a supposed "expert" in the study of autism since it so neatly synthesises historic and current understanding of the condition... a thoughtfully written book, which makes a modern, through and readable account of a complex and intriguing condition' - Autism 'This is an authoritative, accessible and original approach to our current understanding of autistic spectrum disorders' - Rita Jordan PhD, Emeritus Professor in Autism Studies, University of Birmingham 'Jill Boucher is a leading academic and clinician who brings an individual and authoritative perspective to the autism field. In this book she does an excellent job of communicating a broad range of practical as well as theoretical issues to a general audience, making up-to-date information about this puzzling condition accessible to a wide readership. Boucher's book is a welcome and unique addition to the literature' - Tony Charman, Professor of Neurodevelopmental Disorders, University College of London What are the historical foundations of autism and what precisely is meant by the 'autistic spectrum'? How can we explain behavioural patterns of people with autism, young or old, and what are the major theoretical bases for understanding these? What is the latest thinking regarding diagnosis, and what are the most effective strategies for assessment, education and care for people with this condition? This provocative new text sets out to answer these questions. It charts developments in understanding the nature and causes of autistic spectrum disorders, guiding students through theories at the psychological, neurobiological and 'first cause' levels to methods of assessment, intervention, education and support. Written as an introductory text for those with little prior knowledge of autism but also as a source of basic information and references for those already familiar with the field, this book will be invaluable for a broad range of vocational and academic students and for parents and professionals who want an account of



Discussing various aspects of potential ASD causing factors, Autism and Environmental Factors brings together as many pieces of the autism puzzle as possible in one place to begin to clarify the picture and spark discussion to ensure a safe environment for everyone, especially our developing children. Discusses the genetic and environmental factors that may contribute to autism Covers how the human brain develops and the critical stages in which a fetal brain may acquire genetic and developmental abnormalities Describes the rapid proliferation of synthetic chemicals in our modern world and the effects on the developing human brain—endocrine-disturbing chemicals that alter DNA, epigenetics, and hormones Written in a clear and accessible style Autism and Environmental Factors is an important book for researchers and students in neuroscience, neuroanatomy, developmental neurobiology and anyone focusing on autism research. This dissertation, "Disconnectivity in Autistic Brain" by Ho-yin, Wong, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: ?Autism is a life-long neurodevelopmental condition. Autistic individuals have difficulties in communicative and social ability, and repetitive and stereotypic behavior. It has proposed that these symptoms are caused by underconnectivity in the autistic brain. Functional imaging studies have reported functional underconnectivity in autism. In this thesis, the structural connectivity of the autistic brain was studied. White matter contains axon fibers, which connect different cortical and subcortical brain regions. To measure the structural connectivity, Diffusion tensor imaging (DTI) was applied. Since water diffusion in axons inside the white matter is directional, by measuring the magnitude and direction of water diffusion in white matter, the structural integrity of white matter fibers could be estimated. In this thesis, the background of autism as a genetic, neurological and behavioral condition is outlined. The methods needed to acquire and analyze DTI data are illustrated. A meta-analysis on abnormalities found in autistic brain using DTI was conducted and the most consistently reported regions with DTI differences in autism compared to typically developing controls are described. The results of the metaanalysis were localized to white matter tracts likely to be involved, and the possible associations between anatomy and autistic behavioral features are discussed. Finally, a DTI tractography study was conducted in a sample but clinically representative sample of patients with ASD and eighteen major white matter tracts were explored. Underconnectivity in several tracts was identified. It is hoped that the findings reported here will enhance our understanding of widespread underconnectivity in autism. DOI: 10.5353/th\_b4732616 Subjects: Autism - Diagnosis Brain - Imaging Diffusion tensor imaging

WINNER OF 'BEST NON FICTION' IN THE GOODREADS CHOICE AWARDS 2013 It's estimated that one in almost a hundred people are diagnosed as being on the autistic spectrum but there is far more hope for them today than ever before thanks to groundbreaking new research. In this fascinating and highly readable book, Temple Grandin offers her own experience as an autistic person alongside remarkable new discoveries about the autistic brain, as well as genetic research. She also highlights long-ignored sensory problems as well as the need to treat autism symptom by symptom, rather than with an umbrella diagnosis. Most exciting of all, she argues that raising and educating children on the autistic spectrum needs to be less about focusing on their weaknesses, and more about fostering their unique contributions. Stories that show how the autistic brain may hold the secrets for making your dreams come true using the Law of Attraction.

Do you think autism is hard to understand? Then this book will surprise you. Why? Because this book was written in an easy-to-understand language. Through simple illustrations and comparisons you will understand the answer to the following questions: How does the autistic brain work? How does someone with autism see the world and experiences thoughts, emotions and sensations? What's the right way to teach complex ideas to someone with autism? How to teach emotional intelligence and empathy to a person with autism? How do you teach them to deal with their own emotions and the emotions of other people? What strategies can someone with autism use to deal with bullying and aggressive people? What are the real special needs of autism? What are the appropriate ways to meet these needs? What is sensory hypersensitivity and how can you use this knowledge to avoid many nervous breakdowns and panic attacks? What is stimming and what is the hidden message behind repetitive movements? What causes a meltdown, how to predict it and how to get through it quickly? Why is vitamin D supplementation vital for brain development during the first years of life? What are favorite people and how can you become one? What 4 supplements, including vitamin D, have been shown to improve the symptoms of autism in clinical studies published in scientific journals? What are their appropriate dosages and possible side effects? The higher the degree of autism someone has, the greater the dedication needed to apply these pieces of advice. However, this book guides you step-by-step, using many examples written in an easy-to-understand language. What's more, if you have Asperger's Syndrome, this book will help you understand how your brain works and how you must adjust your daily routines to reduce your anxiety and lead a better life. Based on his extended association with people with autism and an extensive research in the scientific literature, biographical reports and reference works, Tiago Henriques -- independent author, researcher and educator -- guides you through each of the unique characteristics of the autistic mind, their special needs, and the right strategies to meet each one of those needs. This practical guide is an essential reading for parents of children with autism, educators and teachers, and anyone with autism.

"A cutting-edge account of the latest science of autism, from the best-selling author and advocate Temple Grandin is a star, a Time Magazine top 100 Hero and an inspiration to millions worldwide. Since she started writing and speaking about autism, the number of people diagnosed with it has skyrocketed--but so has the research that is transforming our understanding of the autistic brain. Now she brings her singular perspective to a thrilling journey through the autism revolution. Weaving her own experience with remarkable new discoveries, she introduces the neuroimaging advances and genetic research that link brain science to behavior, even sharing her own brain scans from numerous studies. We meet the scientists and self-advocates who are introducing innovative theories of what causes, how we diagnose, and how best

to treat autism. She highlights long-ignored sensory problems and the treatments that might help them, and warns of the dangers of politics defining the diagnosis of autism spectrum. Most exciting, in the science that has begun to reveal the long-overlooked strengths conferred by autism, she finds a route to more effective mainstreaming and a way to unleash the unique advantages of autistic people. From the "aspies" in Silicon Valley to the five-year-old without language, Grandin understands the true meaning of the word spectrum. The Autistic Brain is essential reading from the most respected and beloved voices in the field"--

Isaac the Autistic Superhero is an uplifting adventure story about a young boy with autism who possesses mental and physical abilities far more advanced than anyone has ever seen. At a young age, the boy must go into hiding from a "Mad Scientist" named Dark Mamma who will stop at nothing to find out how or why he has more brain function than any other person in the world. His master plan is to try to harness the exceptional brain power that lies inside the boy's brain and re-create those powers inside a typical mind to build a "Superpower Army"! While in hiding, the boy is faced with many exciting and amazing challenges on his journey into adolescence as he deals with the hardship of his Autism on his path to manhood. On his journey, you will take a rare look inside his amazing world and see how his mind and body develop because of the re-wiring of his mind (Autism), and find out how he finally gets a firm grip on all his exceptional gifts, advanced abilities, and superior mind, readying him to face the challenges ahead. Now, years later, the "Mad Scientist" is back and will stop at nothing to capture him. But Dark Mamma has no idea of what he is in for. Find out how the boy uses his exceptional gifts in a far out, very possible and amazing way. The fun and excitement are non-stop in this thrilling adventure story.

Although it is accepted that autism is a highly heritable neurodevelopmental disorder that exhibits brain overgrowth in early years of life, underlying genetic mechanisms of this abnormal development remain unknown. It has been long hypothesized that autism begins prenatally due to abnormal cell proliferation, cell number regulation, and cell migration functions as the cortex is formed. These possibilities have never been systematically examined in the young developing autistic cerebral cortex, in part due to the limitations of tissue preservation quality. We aimed to test these hypotheses through genome-wide expression profiling and RTPCR on mRNA from postmortem brain tissue of young autistic and control cases. To yield the most reliable dataset with the largest sample size possible for this analysis, we first compared in vitro transcription (IVT)- and cDNA-mediated Annealing Selection and Ligation (DASL)-based expression platforms on partially degraded RNA from reference pools, and frozen and formalin fixed postmortem brain tissue. Results suggested that the DASL-based platform produced more reliable expression data than the IVT-based platform with partially degraded RNA. Next, data preprocessing procedures for the DASL-based gene expression results from postmortem frozen brain samples were systematically tested. We developed a data preprocessing pipeline to prepare this dataset for downstream analyses between autistic and control samples. Differential expression and enrichment analyses revealed that genes regulating cell cycle, apoptosis, proliferation, cellular differentiation, and neural patterning functions were dysregulated in young autistic cases. Similar results were found in an expanded analysis of autism at young and adult ages. Our observations suggest that molecular aberrancies in prenatal and early postnatal neurodevelopment may be responsible for brain overgrowth, cortical asymmetry, cortical disconnectivity, aberrant neural function, and ultimately the behavioral phenotype of autism.

Asperger's is not a condition to be 'managed' or 'tolerated', it is in fact that just a different way of thinking and there is a lot about it to celebrate and enjoy. Read this book to know more .

Understanding Autism: The Search for Answers by the Editors of Scientific American The term "autism" first appeared in the early 1900s and comes from the Greek word "autos," meaning self, used to describe conditions of social withdrawal – or the isolated self. Today, autism is one of three diagnoses that the DSM (Diagnostic and Statistical Manual of Mental Disorders) includes in autism spectrum disorder (ASD). While our understanding of this condition has grown exponentially, research has been fraught with controversy. Autism appears to be on the rise, depending on how you define it, and its causes more complex than imagined. In this eBook, Understanding Autism: The Search for Answers, Scientific American's editors have gathered the most current information on autism, including how it's diagnosed, risk factors, treatments and therapies. Section 1 begins with the symptoms, or traits, of ASD, which include three main disabilities: lack of social skills, lack of communication skills, and repetitive behaviors. Also in this section, "The Hidden Potential of Autistic Kids" discusses the flip side of the equation – instead of focusing on the condition's limitations, what unique capabilities might people possess – a thread that continues in the remarkable stories of Section 2, "Autistic Savants. Subsequent sections examine the complicated genetic and environmental causes, the nature of the autism "epidemic" as well as the most current therapies. Changes to the diagnostic criteria in the DSM-5 caused understandable concern and are reviewed in two important stories by Ferris Jabr. Finally, in discussing available therapies, two companion pieces by Nancy Shute take us on a journey through the minds of parents, many of whom are desperate to help their autistic kids lead easier, productive and more fulfilling lives. While science rushes to offer better options, this eBook gives a synopsis of the state of the union - what we know and what we don't know about this challenging condition.

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Introduction: Autism is a complex developmental disability that typically appears during the first three years of life, and is the result of a neurological disorder that affects the normal functioning of the brain, impacting development in the areas of social interaction and communication skills. According to the Centers for Disease Control and Prevention (CDC) in 2009, about 1 in 110 American children will fall somewhere in the autistic spectrum. Although the cause of autism is still largely not clear, researchers have suggested that genetic, developmental, and environmental factors may be the cause or the predisposing effects towards developing autism. While shape based statistical analysis methods for autism are still in their early stages, current results show positive outlooks on the ability to detect differences between autistic and normal patients. Methods: The goal of this thesis is to construct a complete package that is capable of taking 2-dimensional images from a standard medical scanner, and be able to construct a three-dimensional representation of the object and examine it through combination of its weighted linear spherical harmonics. The desired outcome is that a distinction can be made between the analysis of autistic and normal brain data. The analysis package created is divided into three distinct components that are capable of performing the complete analysis on a subject. The components included in the package in order of runtime are: volumetric extraction and mesh generation from 2-dimensional medical scanner data, spherical deformation of the constructed mesh, and weighted spherical harmonic representation and analysis. Results: The minimum error for each brain following spherical harmonic reconstruction was calculated along with the fastest iteration at which the brain converged below the error thresholds of 11% and 10%. It was expected that due to the complexity of an Autistic brain these would require more iterations to converge to the same error level as a normal brain. It was also likely that within the number of iterations tested the autistic brains would record a larger final error due to this slower convergence rate. This was confirmed by the data. A global result was examined as well for the autistic and normal data groups. The overall minimum error for normal brain data was significantly lower than the autistic brain data. The average error for autistic brain data was significantly higher in both convergence measurements, but was dramatically higher in the 10% category. Conclusion: Using this method of analyzing data can demonstrate accurate differences in normal and autistic brains. The research that has been generated in this thesis can clearly demonstrate that the normal brain data converged both faster and with a lower rate of error level than the Autistic brain data. This result proves that the autistic brain is a more complex structure, and would be more difficult to reconstruct using this Shape- Based Detection of Cortex Variability process.

Emerging evidence for differences between individuals with autism and neurotypical controls in tactile processing suggests the somatosensory cortex as a promising substrate for identifying differences in functional brain connectivity. Identifying a neural biomarker of ASD can spur novel biological and pharmacological treatments. We tested four candidate neural biomarkers of autism using

magnetoencephalography (MEG) to examine the cortical response to passive tactile stimulation of the thumb and index finger of the dominant hand and lip of individuals with and without autism. The following observations can be made: 1) Individuals with autism have bigger brains early in development. We found the distance between the cortical representations of thumb and lip was significantly larger in the autism group, but not for the representations of the index finger and lip. The inhomogeneity in cortical topography is not a straightforward consequence of a bigger brain but does demonstrate abnormality in sensory organization of the autistic brain. 2) Autistic brains have noisy synapses. The hypothesis predicts increased variability in the response to touch. We did not find higher variability in the evoked response to tactile stimulation in autism, arguing against the noisy synapse hypothesis. 3) Lower level of inhibition in brain circuits of autism is a leading biomarker candidate. The amplitude of cortical response to the stimulation of adjacent fingers is governed by the level of cortical inhibition, and is a physiological test. A comparison of the two groups found a difference in the direction opposite that of prediction. We also examined neural adaptation to prolonged stimulation as cortical inhibition levels, at least in part, controls its extent. Contrary to prediction, the somatosensory cortex of individuals with autism adapts to touch to the same extent as control. Thus, our findings do not support reduced cortical inhibition in autism. 4) Another leading candidate biomarker is local overconnectivity. When a digit is stimulated, i.e., touched, its representation in cortex is directly activated; local intracortical connections indirectly activate non-primary cortical representations corresponding to adjacent digits. Local overconnectivity in autism implies higher nonprimary/primary response ratios, which we did not observe. The results were more consistent with local underconnectivity instead.

In this fascinating book, Dr. Treffert looks at what we know about savant syndrome, and at new discoveries that raise interesting questions about the hidden brain potential within us all. He looks both at how savant skills can be nurtured, and how they can help the person who has them, particularly if that person is on the autism spectrum.

This book gives a basic and broad but innovative view of autism. It seeks to rupture stereotypes and stigmas and starts with the story and paintings of the artist Camila Falchi, who has an Autism Spectrum Disorder (ASD). Camila's art is evidence of the complexity of her internal world and its variety of themes, intensity of feelings, daydreaming, fantasy, and dreams. This complexity compels us to question and rethink our perceptions of the autism spectrum, the mind, and creativity. As a neurologist and a neuroscientist, our goal with this book is to disseminate knowledge about autism, its characteristics, and potentials by means of the example of this artist.

A collection of essays and drawings by Max Miller, a 12 year old boy on the autism spectrum. Max explains to the reader about what life is like with autism, providing insight into the autistic mind through the words and drawings of a child on the spectrum.

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