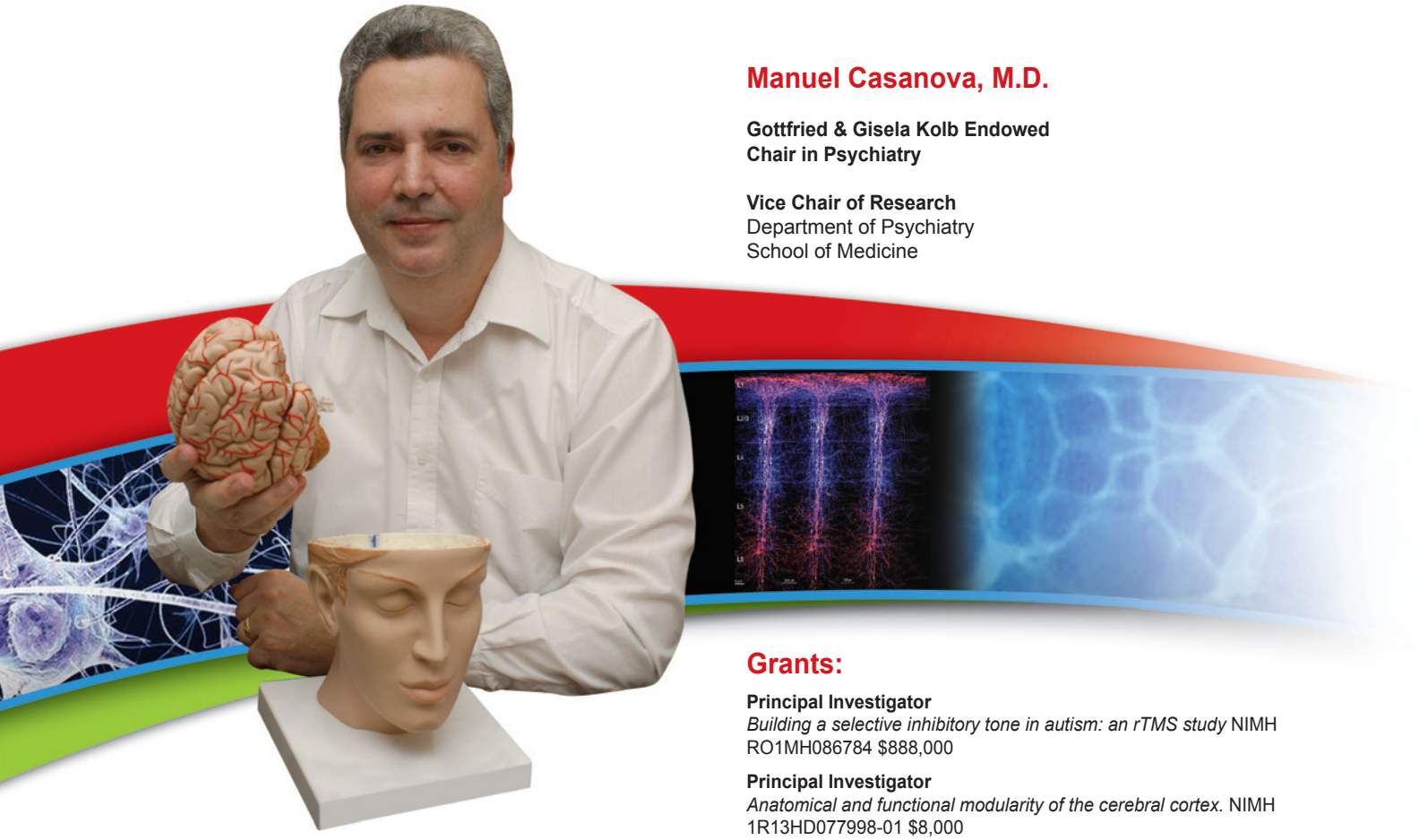

Manuel Casanova, M.D.

Gottfried & Gisela Kolb Endowed Chair in Psychiatry

Vice Chair of Research
Department of Psychiatry
School of Medicine

Scholarly Activities:

Dr. Manuel **Casanova** made his residency training in neurology and then spent3 years doing a fellowship in neuropathology at The Johns Hopkins Hospital. During his stay at the Johns Hopkins Hospital, Dr. **Casanova** was in-charge of Pediatric Neuropathology, a fact which kindled his interest in developmental disorders of the brain. His clinical experience was enhanced by appointments as either a consultant or staff neuropathologist at Sinai Hospital (Maryland), the North Charles Hospital and the D.C. General Hospital. He spent several years as Deputy Medical Examiner for Washington, D.C., where he gained valuable experience in the post-mortem examination of Sudden Infant Death Syndrome and child abuse. His expertise in the field was recognized by honorary appointments as a Scientific Expert for the Armed Forces Institute of Pathology (AFIP) and as a Professorial Lecturer for the Department of Forensic Science at George Washington University. Dr. **Casanova** spent 8 years helping to establish 2 of the most successful brain banks in this country: The Johns Hopkins Brain Resource Center (3 years) and the Brain Bank Unit of the Clinical Brains Disorders Branch at the National Institutes of Mental Health (5 years). Dr. **Casanova** did training in psychiatry at the National Institutes of Mental Health under the tutelage of Drs. Richard Wyatt, Danny Weinberger, and Joel Kleinman. He retired as a Major in the US Army Reserves and later on as a Lt. Commander in the Public Health Service. He joined the Medical College of Georgia as a full Professor in 1991 and came to the University of Louisville in 2003 as the Gottfried and Gisela Kolb Endowed Chair in Psychiatry.

Dr. **Casanova** has had over twenty years of experience in the neurosciences. Although trained in the classical methods of neurology and neuropathology his interest has gradually shifted towards the study of abnormalities of cortical circuitry. His research has focused on the cell minicolumn, a vertical conglomerate of 80 to 100 neurons having a common latency of response to stimulation. Using computerized imaging analysis he has established the anatomical validity of the cell minicolumn. His earlier work has reported interhemispheric differences in the morphometry of minicolumns that could provide for the speciation of hominids. Localized in Brodmann area 22—part of Wernicke's language region—the morphometric difference may play a role both in the development of language and in its disorders. His most recent studies have looked for the presence of abnormalities of minicolumnar organization and lateralization in the brains of patients who exhibit language disturbances, including autism, Asperger's syndrome, and dyslexia. He has summarized his work on minicolumns and provided an overview of the field in recent reviews of the literature appearing in Brain and Brain, Behavior and Evolution.

Grants:

Principal Investigator
Building a selective inhibitory tone in autism: an rTMS study NIMH RO1MH086784 $888,000

Principal Investigator
Anatomical and functional modularity of the cerebral cortex. NIMH 1R13HD077998-01 $8,000

Co-Principal Investigator
Electrophysiological and behavioral outcomes of Auditory Integration Training (AIT) in Autism. Autism Research Institute $18,000.

Co-Principal Investigator
Effects of Repetitive Transcranial Magnetic on Gamma Activity and Redox State. Autism Research Institute $50,000.

Co-Principal Investigator
A novel image-based diagnostic system for the accurate diagnosis of autism. Coulter Translational Research Partnership, Wallace H. Coulter Foundation $100,000

Co-Principal Investigator
A novel image-based diagnostic system for the accurate diagnosis of autism. Kentucky Science and Technology Corporation (KSTC):COMMFUND-12-RFP-014 $100,000.

Publications (2013-2014):

Parthasarathy RN, Lakshmanan J, Thangavel M, Seelan RS, Stagner JI, Janckila AJ, Vadnal RE, **Casanova** MF, Parthasarathy LK. Rat brain myo-inositol 3-phosphate synthase is a phosphoprotein. Molecular and Cellular Biochemistry 378(1-2):83-9, 2013.

Williams EL, **Casanova** MF. Reassessment of the teratogenic risk from antenatal ultrasound. Translational Neuroscience, 4(1):81-87, 2013.

Williams EL, **Casanova** MF, Switala AE, Li H, Qiu M. Transposable elements occur more frequently in autism-risk genes: implications for the role of genomic instability in autism. Translational Neuroscience 4(2):171-202, 2013.

Frye RE, Rossignol D, **Casanova** MF, Brown GL, Martin V, Edelson S, Coben R, Lewine JD, Slattery JC, Lau C, Hardy P, Fatemi SH, Folsom TD, MacFabe DF, Adams JB. A review of traditional and novel treatments for seizures in autism spectrum disorder: findings from a systematic review and expert panel. Frontiers in Public Health, 1(31):1-26, 2013.

Casanova MF, El-Baz AS, Kamat SS, Dombroski BA, Khalifa F, Elnakib A, Soliman A, Allison-McNutt A, Switala AE. Focal cortical dysplasias in autism spectrum disorder. Acta Neuropathologica Communications 1:67, 2013. doi:10.1186/2051-5960-1-67

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Opris I, **Casanova** MF. Prefrontal cortical minicolumn: from executive control to disrupted cognitive processing. Brain 137(7):1863-1875; doi: 10.1093/brain/awt359.

Dombroski BA, Nitzken MJ, Elnakib AA, Khalifa F, Switala AE, El-Baz AS, **Casanova** MF. Cortical surface complexity in a population-based normative simple. Translational Neuroscience 5(1):17-24, 2014.

Thangavel M, Seelan RS, Lakshmanan J, Vadnal RE, Stangner JI, Parthasarathy LK, **Casanova** MF, Parthasarathy RN. Proteomic analysis of rat prefrontal cortex after chronic valproate treatment. Journal of Neuroscience Research, 92(7):927-36, 2014.

Casanova MF. Autism as a sequence: from heterochronic germinal cell divisions to abnormalities of cell migration and cortical dysplasias. Medical Hypothesis, 83(1):32-8, 2014.

Zeidan-Chulia F, Neves de Oliveira B-H, Salmina AB, **Casanova** MF, Pens Gelain D, Verkhratsky A, Fonseca Moreira JC. Altered expression of Alzheimer's disease related genes in the cerebellum of autistic patients: a model for disrupted brain connectome and therapy. Cell Death and Disease, 2014 May 22;5:e1250. doi: 10.1038/cddis.2014.227.

Elnakib A, Soliman A, Nitzken M, **Casanova** MF, Gimel'farb G, El-Baz A. Magnetic resonance imaging findings for dyslexia: a review. J Biomed Nanotechnology 10:2778-2805, 2014.

Nitzken MJ, **Casanova** MF, Gimel'farb G, Inanc T, Zurada JM, El-Baz A. Shape analysis of the human brain: a brief survey. The Journal of Biomedical and Health Informatics 18(4):1337-1354, 2014.

Sokhadze E, El-Baz A, Sears L, Opris I, **Casanova** MF. rTMS neuromodulation improves electrocortical functional measures of information processing and behavioral responses in autism. Frontiers in Systems Neuroscience, 2014 Aug 6;8:134. doi: 10.3389/fnsys.2014.00134. eCollection 2014.

Casanova MF. The modular organization of the cerebral cortex: minicolumns and minicolumnopathies. The Siberian Journal of Special Education, Thematic Issue: International Experience of Education and Socialization of Children and Adults with Autism, 1(13): 9-13, 2014. ISSN: 2221-1160 https://cloud.mail.ru/EDA150D61DDF4503AB6C5B3F87D2F682

Sokhadze EM, El-Baz AS, Tasman A, Sears LL, Wang Y, Lamina EV, **Casanova** MF. Neuromodulation integrating rTMS and neurofeedback for the treatment of autism spectrum disorder: an exploratory study. Appl Psychophysiol Biofeedback, e pub 2014 DOI 10.1007/s10484-014-9264-7.

Casanova MF, Hensley M, Sokhadze EM, El-Baz A, Wang Y, Li X, Sears L. Effects of weekly low-frequency rTMS on autonomic measures in children with autism spectrum disorder, Frontiers in Human Neuroscience, 8:851. Doi:10.3389/fnhum.2014.00851. eCollection 2014.

Casanova EL and **Casanova** MF. Genetics studies indicate that neural induction and early neuronal maturation are disturbed in autism. Frontiers in Cellular Neuroscience, 2014 Nov 19;8:397. doi: 10.3389/fncel.2014.00397. eCollection 2014. PMID:25477785.

Book Chapters 2013-2014:

Casanova MF. The minicolumnopathy of autism. In J Buxbaum and P Hof (editors): The Neuroscience of Autism Spectrum Disorders, Academic Press:Oxford, chapter 3.7, pp. 327-333, 2013.

Casanova MF, El-Baz AS, Suri JS (eds) Imaging the Brain in Autism, Springer: New York, 2013.

Casanova MF, Patterson PH, London E. Introduction to Neuropathology. **Casanova** MF, El-Baz AS, Suri JS (eds) Imaging the Brain in Autism. Springer: New York, ch. 1, pp. 1-26, 2013.

Casanova MF, Pickett J. The Neuropathology of Autism. In **Casanova** MF, El-Baz A, Suri JS (eds) Imaging the Brain in Autism. Springer: New York, ch.2, pp.27-44, 2013.

Sokhadze EM, Baruth J, Tasman A, **Casanova** MF. Event-related potential studies in cognitive processing abnormalities in autism. In **Casanova** MF, El-Baz AS, Suri JS (eds.) Imaging the Brain in Autism. Springer:New York, ch. 4, pp. 61-86, 2013.

Casanova MF, Baruth J, El-Baz AS, Sokhadze GE, Hensley M, Sokhadze ES. Evoked and induced gamma frequency oscillations in autism. In **Casanova** MF, El-Baz AS, Suri JS (eds) Imaging the Brain in Autism. Springer:New York, ch.5, pp. 87-106, 2013.

Sokhadze E M, **Casanova** M F, Baruth J. Transcranial magnetic stimulation in autism spectrum disorders. L. Alba-Ferrara (ed.) Transcranial Magnetic Stimulation: Methods, Clinical Use and Effects on the Brain, NOVA Biomedical: New York, ch XIII, p. 219-231, 2013.

Casanova MF. Neural mechanisms in autism. In Fred Volkmar (ed.) Encyclopedia of Autism Spectrum Disorders, Springer:New York, pp. 1994-2007, 2013.

Chance S, **Casanova** MF. Auditory cortex asymmetry and language processing in schizophrenia. In Paolo Brambilla and Andrea Marini (eds), Brain evolution, language, and psychopathology in schizophrenia. Routledge, Taylor and Francis Group, New York, ch. 4, pp. 53-72, 2013.

Williams E L, **Casanova** M F. Valproic acid, genetics, and autism: How epimutation alters disease susceptibility. Valproic Acid: Pharmacology, Mechanisms of Action and Clinical Implications. Hauppage, NY: Nova Science Publishers, Inc., 2013.

Casanova MF, Dombroski B, Switala AE. Imaging and the corpus callosum in patients with autism. In The Comprehensive Guide to Autism. Springer:New York, pp. 947-962, 2014.

Baruth JM, Sokhadze E. El-Baz A, Sears L, **Casanova** MF. Transcranial magnetic stimulation for the treatment of autism. Siri K and Lyons T (eds). Cutting Edge Therapies for Autism, Skyhorse Publishing: New York, 4th edition, 2014, p. 120-130.

Dombroski B, Kaplan M, Kotsamanidis-Burg B, Edelson SM, Hensley MK, Sokhadze EM, **Casanova** MF. Effect of ambient prism lenses and visual-motor training on heart rate variability and behavioral outcomes in autism. Siri K and Lyons T (eds). Cutting Edge Therapies for Autism, Skyhorse Publishing: New York, 4th edition, 2014, p. 138-164.

Casanova MF. The neuropathology of autism. In Fred Volkmar, Kevin Pelphrey, Rhea Paul, Sally Rogers (eds). Handbook of Autism and Pervasive Developmental Disorders 4th edition, ch. 21. Pp. 497-531, 2014.

Williams EL, **Casanova** MF. Ultrasound and autism: how disrupted redox homeostasis and transient membrane porosity confer risk. In Dietrich-Maszalska D, Gagnon S, Chauhan V (editors) Oxidative Stress in Basic Research and Clinical Practice: Studies on Psychiatric Disorders, 2014, in press.

Casanova MF. The neuropathology of autism. In SH Fatemi (ed) The Molecular Basis of Autism, SpringerScience:new York, ch. 8, 2015, in press.

Casanova MF, Amaral DG, Rubenstein JLR, Rogers SJ. Neuroscience of Autism. In Allan Tasman, Jeffrey Liberman, Jerry Kay, Michael First, and Michelle Riba (eds) Psychiatry, Wiley and Sons: 4th edition, ch. 23, 2014 in press.

Casanova MF, Sokhadze E. Transcranial Magnetic Stimulation: Application in Autism treatment. Valerie Hu (ed) in Frontiers in Autism Research: New Horizons for Diagnosis and Treatment. World Scientific Publishing Company, New Jersey, ch.23, pp. 583-606, 2014.

External Professional Activities (2013-2014):

Advisory Board: On Mental Health (OMH) stichting, Netherlands. Registration number: KvK # 24474513 Web site: www.onmentalhealth.org.
Scientific Advisory Board Lifeboat Foundation Board of Directors Families for Effective Autism treatment (FEAT)
Scientific Advisory Board: Center for Advanced Diagnostics, Evaluation, and Therapeutics
Co-founder and Board of Trustees member: International Autism Institute
Scientific Advisory Committee: Generation Rescue
Scientific Advisory Board: Clearly Present Foundation
Founding Member: Autismo Colombia
Editorial Board: Autism Research
Associate Editor: Translational Neuroscience
Editor: Autism Insights
Editor: Autism Research and Treatment
Editorial Board: Journal of Special Education and Rehabilitation
Review Editor: Frontiers in Neurodegeneration
Editor: World Journal of Translational Medicine
Associate Editor: Open Journal of Psychiatry
Editor: The Scientific World Journal (Psychiatry and Pathology Domains)
Editorial Board: Neuroscience (IBRO)
Editorial Board: Acta Neuropathologica
Editor-in-Chief: OA, Autism
Editorial Board: Journal of Life Medicine
Review Editorial Board: Frontiers in Child and Human Development
Editorial Board: BioMed Research International (Pathology)
Editorial Board: Journal of Intellectual Disability
Editorial Board: Journal of Autism
Editor Special Issue in Frontiers in Systems Neuroscience, Augmentation of Brain Function: Facts, Fiction and Controversy
Associate Editor: History and Philosophy of Neuroscience, Frontiers in Human Neuroscience