	ADHD	Autism	Bipolar Disorder	Depression	Schizophrenia

Psychiatric Disorders:

- **Maternal Immune Activation**
- **Developmental Aspects**
- **Common Genes**
- **Epigenetics**
- **Executive Functioning Differences / Deficits**
- **Hyper-Connected Brains**

	ADHD	Autism	Bipolar Disorder	Depression	Schizophrenia

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Maternal Immune Activation	**JAMA Pediatrics (2021)** **Association of Maternal Autoimmune Disease with Attention-Deficit/Hyperactivity Disorder in Children**	**Science (2016)** **Maternal immune activation: Implications for neuropsychiatric disorders**	**Pharmacology, Biochemistry & Behavior (2019)** **Revisiting inflammation in bipolar disorder** **["We focus mainly on recently proposed mechanisms including the role of the gut-brain axis, the release of damage-associated molecular patterns (DAMPs), and the genetic and**	**Seminars in Cell & Developmental Biology (2020)** **Transgenerational consequences of maternal immune activation** **["Prenatal exposure to infectious or inflammatory insults is increasingly recognized in the etiology of neuropsychiatric diseases, including schizophrenia,**	**Molecular Neurobiology (2020)** **Maternal Immune Activation Causes Schizophrenia-like Behaviors in the Offspring through Activation of Immune-Inflammatory, Oxidative and Apoptotic Pathways, and Lowered Antioxidant Defenses and Neuroprotection**

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			epigenetic mechanisms. "BD immunology is an evolving field and current studies indicate this disease is more than a brain disorder, and it can be conceptualized as a multi-system condition."]	autism, depression and bipolar disorder. "New discoveries highlight that maternal immune activation can lead to pathological effects on brain and behavior in multiple generations."]	
Developmental Disorders	Current Opinion in Neurobiology (2015) Brain Development in ADHD ["Attention-deficit/hyperactivity disorder (ADHD) is a common neurodevelopmental disorder with	La Revue du Praticien (2019) Autism, a Neuro-Developmental Disorder ["towards the implementation of lifespan coordinated personnalized	Molecular and Cellular Neurosciences (2016) Neurodevelopmental origins of bipolar disorder	The World Journal of Biological Psychiatry (2018) Neurobiology of depression: A neurodevelopmental approach	Journal of the International Neuropsychological Society (2017) Evolving Notions of Schizophrenia as a Developmental Neurocognitive Disorder

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	underlying brain anatomical and functional measures, as well as familial/genetic factors that are major foci of neuropsychiatric research."]	**medical and social practices"]**			

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Disorders Share Common Genes	 **5 Disorders Share Common Genes ---US National Institute of Mental Health (2013)**

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	See also Lancet (2013) Identification of risk loci with shared effects on five major psychiatric disorders: a genome-wide analysis --- Cross-Disorder Group of the Psychiatric Genomics Consortium				
Epigenetics	**Journal of Attention Disorders (2019)** **Epigenetics and ADHD: Toward an Integrative Approach of the Disorder Pathogenesis** **Environmental ADHD risk factors . . . lead to changes in DNA methylation and in histone**	**L'Encephale (2017)** **Epigenetics' implication in autism spectrum disorders: A review** **"These recent discoveries in epigenetics are the beginnings of an etiopathogenic**	**International Journal of Bipolar Disorder (2019)** **Epigenetic markers in inflammation-related genes associated with mood disorder: a cross-sectional and longitudinal study in high-risk offspring of bipolar parents**	**Dialogues of Clinical Neuroscience (2019)** **Epigenetics & Depression** **["From these studies, a model emerges where underlying genetic and environmental risk factors, and interactions between the two,**	**Cells (2020)** **Epigenomic Dysregulation in Schizophrenia: In Search of Disease Etiology and Biomarkers** **While schizophrenia has a strong genetic component, with heritability around 80%, there is also a very significant range of**

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	modification levels. “	research revolution in neurodevelopmental disorders. “		could drive aberrant epigenetic mechanisms targeting stress response pathways, neuronal plasticity, and other behaviorally relevant pathways that have been implicated in major depression.”)	environmental exposures and stressors that have been implicated in disease development and neuropathology, such as maternal immune infection, obstetric complications, childhood trauma and cannabis exposure. It is postulated that epigenetic factors, as well as regulatory non-coding RNAs, mediate the effects of these environmental stressors.

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Executive Functioning Differences/ Deficits	**Frontiers in Psychology (2017)** **Differences in Executive Functioning in Children with ADHD**	**Frontiers in Psychiatry (2019)** **Executive Function in Autism Spectrum Disorder: History, Theoretical Models, Empirical Findings, and Potential as an Endophenotype**	**Journal of Affective Disorders (2017)** **Executive functioning deficits among adults with Bipolar Disorder (types I and II): A systematic review and meta-analysis.** **[**	**Current Opinion in Psychiatry (2018)** **Cognitive Dysfunction in Major Depressive Disorder**	**The International Journal of Developmental Neuroscience (2011)** **The developmental course of executive functioning in schizophrenia**
Hyper-Connected Brains	**European Child & Adolescent Psychiatry (2021)** **Beneath the surface: hyper-connectivity between caudate and salience regions in ADHD fMRI at rest**	**Autism Research (2020)** **Dynamic Functional Connectivity Reveals Abnormal Variability and Hyperconnected**	**Journal of Affective Disorders (2021)** **Large-scale network abnormality in bipolar disorder: A multimodal meta-analysis of restingstate functional and structural**	**Journal of Affective Disorders (2019)** **Hyperactive frontolimbic and frontocentral restingstate gamma connectivity in major depressive disorder**	**Schizophrenia Bulletin (2018)** **Dysfunction of LargeScale Brain Networks in Schizophrenia: A Metaanalysis of Resting-State**

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		Pattern in Autism Spectrum Disorder	magnetic resonance imaging studies		Functional Connectivity

What is the cause of hyper-connectivity?

"Neuroscientists agree that plasticity is an inherent property of the nervous systems of all organisms. Neuroplasticity is not, however, a miracle cure for any and every ailment – the brain is a biological system that follows the laws of physics. It has its limits, and so its ability to change itself is also limited by the same laws."

-------"Why Neuroplasticity Might Not be the 'Hail Mary' We're All Looking For"

Moheb Costandi trained as a developmental neurobiologist and now works as a freelance writer. He writes the Neurophilosophy blog, hosted by The Guardian, and his second book, Neuroplasticity, has been published by MIT Press.

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Val's Note: **I think for a lot of people with psychiatric disorders and 'hyper-connected brains" --- they have been playing that NEURO-PLASTICITY CARD for everything it is worth and at some point -- it came up short.**

"Neuroplasticity" may still be a big piece of the puzzle, but we need much more sophisticated understandings than we currently have.

Much of the current hype is dangerous.