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THE REWARD DEFICIENCY SYNDROME (RDS) PARADIGM – RDS IS THE PHENOTYPE: ADDICTION AND MENTAL DISORDER ARE ENDOTYPES: ELLE FOUNDATION RESEARCH INSTITUTE 100S SERIES, FAMILY GENERATIONAL GENOMIC CASE SERIES STUDY #103.

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ABSTRACT
Both quantitative and qualitative observation are used for statistical analysis of the Reward Deficiency Syndrome phenotype, neurogenetic predisposition, for addiction and mental disorder endotypes, in this level 4 evidence, case series. In continuation of the Elle Foundation, 100 research series, Case Series 103 builds upon Case Study 101, in which we introduced the longitudinal study of our proband[1-2]; and Case Series 102[3] in which we compared biological sisters' underlying neurogenetic predisposition for Reward Deficiency Syndrome (RDS). Case study series 103 observes a four generational family for polymorphic gene variances which predispose risk for Reward Deficiency Syndrome (RDS)[4-5] and compares reported lifespan experience of Diagnostic Statistical Manual of Mental Disorder (DSM).[6] Data was collected using personal interview, self-report, personality testing, the RDSQ29[7] and Genetic Addiction Risk Severity (GARS).[8] Result findings support the hypothesis that the proband's polymorphic variances are shared by other family members, adding to the international body of evidence that RDS is a family disease, which should be treated as a frontline modality[9], on a continuum of care[10-11], beginning with Primary Physicians.[12] GARS testing for SUD patients, family members and the next generation of children is advised.

KEYWORDS: Reward Deficiency Syndrome, Genomic Addiction Medicine, Precision Behavioral Medicine, Neurogenetics, Dopamine Homeostasis, Genetic Addiction Risk Severity (GARS).

INTRODUCTION
Reward Deficiency Syndrome (RDS) is a biogenetic model for the diagnosis and treatment of all addictive, impulsive, obsessive-compulsive behaviors.[13-14] RDS is changing the recovery landscape, by establishing a common rubric for all addictions, both Substance Use and Behavioral Process.[15-17] The Reward Deficiency Syndrome paradigm supports the premise that RDS is the phenotype, addiction the endotype.[18]

Observations of other Reward Deficiency Syndrome manifestations include obesity, the depression spectrum, the Autism spectrum, and other dopamine dysregulation mental disorders such ADHD[19], PTSD, Obsessive Compulsive Disorder, and impulse control issues. The RDS paradigm focuses on inducing and achieving dopamine homeostasis to combat low dopamine availability and dopamine dis-regulation.[20] RDS can be both inherited and acquired.[21]

The first addiction gene, DRD2, was discovered in the early 1990's by neuroscientist Dr. Kenneth Blum and associates.[22] To date approximately 100 genes are known to have association and/or correlation to addictive behavioral patterns.[23-25] Whereas the typical human being may have as many as 25,000 genes, the Genetic Addiction Risk Severity or GARS tests for the ten most prominent genetic variances, or eleven alleles, most common in Reward Deficiency Syndrome.[26] The scientists who developed the GARS test, are actively researching other genetic and biological markers of RDS, dedicated to expanding the range of RDS genetic testing.[27] Cutting edge research supports RDS as the phenotype and addictions the endotype[28], meaning RDS is the disease and addiction is the symptom.[29] Over fifty years of research supports this premise.[30]

RDS is a featured psychological disorder in Sage Encyclopedia of Abnormal and Clinical Psychology, and medical dictionaries including Gates and encyclopedia.com. However, Reward Deficiency Syndrome is not yet listed in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 5th Edition. Many prominent scientists have written to the ICD10 committee of the American Psychiatric Association asking for consideration of Reward Deficiency Syndrome, for inclusion in the 6th Edition of the DSM. As of publication, 221 PUBMED listings in Reward Deficiency Syndrome. 1439 articles include mention of reward deficiency. Many of these include brain mapping of blunted ventral tegmental area (VTA) and low dopamine function.

The Reward Deficiency Syndrome paradigm shift is slated for international presentation, upon request, of the scientific committee, at both, the 3rd Edition, 2022 Global Conference on Addiction Medicine, Behavioral Health and Psychiatry, in Orlando, Florida in October 22-24, 2022 and at the 3rd European Congress on Addiction, Psychiatry and Mental Health, November 17-18, 2022, in Rome, Italy. Consideration of the Brain Reward Cascade, and neurogenetic and epigenetics causal influences of low dopamine availability, promise to enlarge perspective of addiction recovery. Columbia University addiction recovery industry review meta-analysis, "Closing the Gap between science and practice"[33], calls for professionals to close the gap between science and practice. It is the authors opinion, that the science of the RDS solutions, which addresses both underlying neurogenetic and epigenetic causal influences for all addictions, will inspire reconceptualization of addiction treatment, by integrating the sciences of addiction medicine and Reward Deficiency Syndrome.[34]

The evolution of addiction treatment shows a timeline of model development. The Minnesota or Hazelden Model was created in the 1950's. In the 1980's the continuum of Substance-Use Disorder treatment, expanded to include non-abstinence approaches[35], with the development of the Harm Reduction Model. The harm reduction model encompasses a broader range of persons experiencing substance abuse issues, but who did not experience the severity requiring inpatient treatment. Meta-analysis fails to support the effectiveness of traditional drug abuse treatment[36], revealing that Twelve Step treatment, alone, falls short of addressing the complexity of the issues, focusing upon the symptoms of drug use, rather than the genetic and epigenetic causal influences.

The Dopamine Depletion Hypothesis[37] opened the way for today's cutting edge, 21st century, neuro-developmental model[38-39] which expands addiction recovery perspective to include consideration of underlying neurogenetic and epigenetic causal influences of addiction and related mental health disorder. Reward Deficiency Syndrome is underlying neurogenetic causal influence, which is both genetic, meaning it is inherited and epigenetic, meaning it can be acquired. In this genomic era of addiction medicine, state of the art treatment plan development begins with genetic screening.[40]

Most individuals will never become addicted, but those who do, tend to have several addictions, both substance use disorder, and behavioral.[41] Many in this population also experience a complexity of comorbid mental health disorders[42-43] and/or psychopathology over a large range of issues.[44] This population seems to experience a revolving door of treatment experience.[45] Clearly a Brain Health Check is in order.[46] In this genomic era of medicine, genetic screening for Reward Deficiency Syndrome is essential. The RDS treatment paradigm addresses those preexisting genetic and neurological challenges which predate addiction and those acquired, epigenetic insults, or mRNA transcriptions[47], which occur as a result of substance misuse, and continue to cause insult, after addiction is treated.[48-49]

RDS treatment addresses the causal influences not just the symptoms. It is a phase two treatment, to begin when inpatient and/or outpatient substance use disorder treatment ends. This treatment paradigm includes Reward Deficiency Syndrome Solutions, ™ such as Genetic Addiction Risk Score (GARS) ™ testing, and Precision Addiction Medicine (PAM) ™[50-51], which includes the pro-dopamine regulator (KB220z), which is a Neuroadaptagen Amino-Acid Therapy (NAAT)™[52] to address neurological imbalances and genetic challenge, and achieve dopamine homeostasis.

These resources have been developed by the collective efforts of many prominent scientists with laboratories from around the world. While Ken Blum, the father of Reward Deficiency Syndrome, is certainly one of the most accomplished scientists on the planet, the culmination of scientific achievement was not accomplished alone. A cooperative network of independent scientists, which reads like a "Who's Who in International Science" have produced vast numbers of seminal research articles, published in the world's most elite peer reviewed journals.

The *original* Elle Foundation, incorporated in Dallas, Texas, on Thursday, January 12, 1995, is no longer in the public sector, preferring to continue as private altruism. The Elle Foundation began as a group of mothers in recovery, trying to explain addiction to their children, to stop the general cycle of addiction. It has matured into the Elle Foundation Research Institute, which promotes awareness of the need for psychoeducation, of the Reward Deficiency Syndrome paradigm, to add neurogenetic[53-54], neurobiological[55-57], and neurocognitive perspective.[58-59]

Basically, the enormity of this challenge demands that addiction be reconceptualized beyond the scope of the

classic, foundational, Minnesota or Hazelden Model.[60-61] We need more than just twelve steps and cognitive behavioral psychology, as the sheer numbers of dying and relapsing individuals prove.[62-63] We need to integrate the fields of addiction medicine, to include consideration of genetics, epigenetics, neurology, pharmacology, as well as the science of wellbeing.[64]

This is monstrous task, and will certainly happen over time, but it is estimated to take a full century, or one hundred years, before cutting edge science becomes common knowledge. Some have suggested that "addiction by any other name is still addiction"[65-66], that may be true. However, there are vast differences in treatment applications which have arisen in this 21st century alone. In this era of genomic addiction medicine, it is indeed misfortunate that the dying masses only have access to 20th century addiction recovery applications.

When this journey began, back in 1995, the founders of the Elle Foundation, were mothers and daughters trying to protect their children from the general cycle of addiction.[67] Some were patients in recovery themselves. Out of desperation, because addiction recovery and psychological application resources in the practitioner world were inadequate, to meet the complexity of need, we sought answers in the research world, and found missing pieces of the puzzle. Today, in 2022, we know that Reward Deficiency Syndrome (RDS) is not only associated with all addictions, and many mental health disorders, RDS affects wellbeing over the lifespan. RDS is associated with early neurodevelopmental issues, Autism Spectrum, ADD/ADHD, Gil de Tourette, and several dopamine depletion dementias, such as Parkinson's Disease. (See Figure 1).

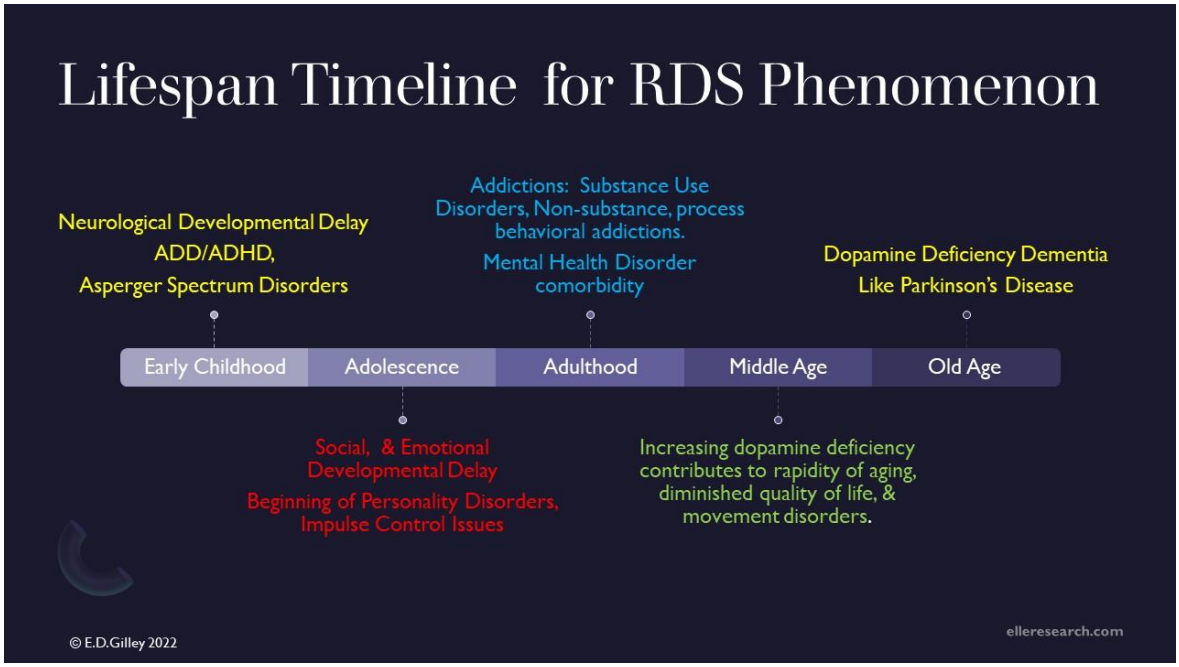

Figure 1.

The Elle Foundation Research Institute advises each member, of a family, with known trauma, Adverse Childhood Experience[68-69]; addictions, whether substance related, such as cocaine use disorder[70], or behavioral, as in eating disorders[71], obesity[72]; gambling, and mental disorders such as depression, ADHD[73-74], and/or Compulsive Disorder[75] needs to be screened. Dopamine deficiency and other neurotransmitter challenges can be treated.

During our ten year review of the body of work of the Blum-Braverman-Gold network of associates, Elle Foundation Research Institute review analysts noticed that there was not yet, psychological application for Reward Deficiency Syndrome. So, we created it, in the form of RDS Solution Focused Brief Intervention (RDS-SFBI) therapy[76], RDS treatment plans personalized according to genome, personality trait and experiential attributes[77-78], and the RDS-Severity of Symptom scale, which is a tool personalized for patient self-management of symptomology.

Reward Deficiency Syndrome Solution Focused Brief Intervention (RDS-SFBI) is psychological education to explain the new paradigm. This therapy assists the clients, in skill development, to become aware and manage RDS symptoms like anhedonia and dysphoria, two new terms, introduced and explained in RDS-SFBI. Addressing RDS risk, early in life may help prevent future problems, and worsening of low dopamine availability [79]. RDS should be treated on an ongoing continuum over the patient's lifespan. Furthermore, genomic research suggests that RDS polymorphic genetic variances do run in families, as is illustrated by the following case series study.

The Elle Foundation 100 series

In recap, and update since the Elle Foundation Research Institute's Case Study 101 was published, our proband reached out to a team of associates from The Kenneth Blum Institute of Behavior and Neurogenetics, in Austin, Texas, and the *private* Elle Foundation, West Palm Beach, FL, asking for help with Reward Deficiency Syndrome addictions and mental health disorder comorbidity. She has been diagnosed with several mental health disorders over the decades, including Cocaine Use Disorder, Tobacco Use Disorder, Bipolar 1, PTSD and ADHD, as well as dissociative issues from sexual trauma. Repetitive Substance Use Disorder (SUD) treatments, more than ten, had not helped her achieve lasting sobriety, and she feels "contributed to increased depression, and diminished self-worth." To classify this participant as treatment resistant would be a disservice, as SUD treatment merely addresses the symptoms of drug use, not the underlying neurogenetic causal influences of all her comorbidity.

Neurological interpretation of DNA analysis, by Genetic Addiction Risk Score (GARS) testing, found that our proband suffers from preexisting neurological challenges, increased serotonin re-uptake, increased dopamine metabolism in the Brain Reward Cascade (BRC), and from a lack of availability of dopamine in other brain regions. EF Case Study 101 is another example, in which Reward Deficiency Syndrome is the phenotype, and addictive behavioral expressions, and mental health disorder comorbidity are endotypes.

A comprehensive holistic RDS treatment plan was created for her unique genome, with consideration of her personality attributes, and traumatic experiential history. Reward Deficiency Syndrome Solution Focused Brief Intervention therapy was administered, to introduce the RDS paradigm and teach her new coping skills to deal with Anhedonia, and Dysphoria, symptoms of dopamine dysfunction. As per RDS-SOS guidelines, she created her own personalized version of the RDS Severity of Symptom scale (RDS-SOS) (See Appendix 1), to measure, document, and keep track of her unique symptomology. This self-management tool is used to measure progress as the proband addresses her RDS dopamine deficiency and chronic abstinence symptoms.[80-81]

As reported by the Journal of Addictive Disorder and Mental Health, in "Reconceptualizing Addiction: Integrating the Sciences of Addiction and Reward Deficiency Syndrome (RDS), Part 2: Case Report, the proband was initially on an "old school Bi-polar 1 pharmaceutical regimen, created over years of trial and error. That regimen has been discontinued and upgraded according to the needs of her genomic challenge. The vastly improved pharmaceutical regimen included a dopamine and norepinephrine re-uptake inhibitor, Buproprion, 75 mg once in the morning, and a dopamine agonist, Ropinirole, .25 mg in the evening.[82] Note, the dosage of this short-term intervention is already being reduced, now halved, towards the goal of elimination. The proband continues her long-term pro-dopamine regulation, with Neuradaptagen Amino-Acid therapy (NAAT), the KB220Z ™ and Brain Reward ™ personalized for her genome, available to the public through Geneushealth.com and VNI.com.

Proband has shown remarkable process and is experiencing, for the first time in her life, peace, stabilized brain chemistry, greatly improving the quality of her life, increasing self-esteem, and improved quality of significant relationships and professional productivity. She states that her "addictions, Bi-polar 1 and ADHD are no longer issues." She continues integrative therapy for dissociative aspects of trauma typical in Post-Traumatic Stress Syndrome.[83] She participates in a daily cognitive behavior support group (enhancedhealing.com) and is focusing on self-love, after reporting feeling unlovable due to shame of mental health stigma.[84]

Now that the proband has achieved pharmaceutical assisted dopamine homeostasis, she now enters the second stage of RDS-Solution Focused Brief Intervention therapy, in which she must achieve dopamine homeostasis without pharmaceuticals, relying upon pro-dopamine regulation via Neurodaptagen Amino-Acid Therapy (NAAT) [85] and other wellness practices.

She has developed a rigorous daily program of exercise[86], proper nutrition[87], which includes elimination of processed foods, such as sugar.[88] She is addressing her obesity[89], losing weight, reducing fat stores, while increasing muscle mass. Areas which still need improvement include: 1) sleep patterns for restorative sleep[90]; 2) reduction of stimulation from social media and television; and 3) reduction of electromagnetic pollution from her environment.

Elle Foundation Case study #102 introduces the proband's biological sister, who was administered the RDSQ29. Test results indicated a need for further investigation, so the Genetic Addiction Risk Severity (GARS) was administered. As expected, GARS analysis found increased risk for Reward Deficiency Syndrome and familial commonalities in polymorphic gene variances which effect dopamine, and serotonin channels, and MOA-O, an enzyme which breaks down dopamine, serotonin, and norepinephrine. Participant 102 has gene sequencing material which is known to be related to alcoholism, eating disorders, depression, and novelty/thrill seeking, and reports life-experience of each of these psychopathologies, varying in degree across the lifespan.

The Elle Foundation 100 series research, Case Study #101, and Case Series #102, illustrate and explain the Reward Deficiency Syndrome paradigm. Findings support Reward Deficiency Syndrome as phenotype and

mental health disorders, such as depression, alcohol and stimulant use disorders, and behavioral addictions, like as eating disorders, as endotypes.

METHODS AND MEASUREMENTS

In Elle Foundation Case Series, #103, we reviewed DNA of 8 family members within this Reward Deficiency Syndrome predisposed family, noting from interview that several generations have suffered from alcoholism, drug addiction, behavioral addictions such as gambling and eating disorders, compulsive disorders, depression, including Bipolar, ADD/ADHD, and the Autism Spectrum. We expect to find similar, but not identical polymorphic variance in gene mutation. We hypothesize a majority will have at least one risk allele in DrD4, 5-HTT-LPR, and MAOA.

In this observational study, the convenience sample, consists of 4 American males, and 4 females, n=8, in one family of origin. Six participants are adults, 2 are minors. Age range extends from 2 to 88. We examine collective neurological challenge from polymorphic gene variance, as determined by allele risk. Then, examine two separate, three generational lines or lineages, for outcome factors. Two participants from this group, the fourth generation, grandsons, age 15 and 2 are the subject of continuing investigation, in a longitudinal prevention study, Elle Foundation Case Study 104.

A wide range of data was gathered through initial screening, and intake, using a RDS symptom checklist, which included conveyance of life experience and mental health disorder diagnoses. Each participant provided informed consent. In the case of youngest grandson, the symptom checklist was waved, and consent given by his mother. In the case of the adolescent grandson, he filled out the questionnaire, but did not retain memory of early trauma. Both he and his guardian gave informed consent for his participation. According to the guidance from the Office on Human Research Protection, (OHRP), IRB approval was not required as this is not an experimental design, poses no threat of harm, and per the Common Rule of exemption, for disposed bodily samples, including DNA.

Each participant was administered the RDSQ29 test, and the Genetic Addiction Risk Severity (GARS) test. DNA for each participant was gathered by rubbing a buccal squab against the inside of their cheek. GARS analysis was performed Geneus Health Laboratory in San Antonio, Texas (geneushealth.com). Each adult participant, and the guardians of the minor participants, were given the GARS results, including RDS risk score, and genetic profile.

The GARS test identifies risk alleles in 1) six single nucleotide polymorphisms (SNPs) of the following genes: COMT, DRD1, DRD2, DRD3, DRD4, and OPRM1; 2) Four variable tandem number repeats and insertion and/or deletion in the following: DAT1, DRD4, 5HTTLPR, and MAOA; and 3) dinucleotide repeats for the GABRB3 gene. The Kenneth Blum Institute of Behavior and Neurogenetics, in Austin, Texas and Geneushealth.com offer explanation of what GARS analyses mean for laypersons, and/or professionals in adjacent fields, who are not current in psychiatric genomics.[91]

In our investigation of the proband's family we find similar neurological challenge experienced by the majority. All eight are at risk for Reward Deficiency Syndrome, even the youngest, two grandsons, aged 15 and 2. Table 1 shows the number of risk alleles for the genes listed below.

Table 1: Elle Foundation Case Study Series 103 Family Genomic Risk Alleles.

ID	COMT	DAT1	DRD1	DRD2	DRD3	DRD4	DRD4R	GABRB3	5HHT	MAOA	OPRM1
101	0	0	0	0	0	1	0	0	2	2	0
102	0	0	2	0	0	2	0	0	2	2	0
103	1	0	1	0	0	2	0	0	2	2	0
104	1	0	0	0	0	1	1	1	1	1	0
105	2	0	1	0	0	0	1	1	0	1	0
106	0	0	1	0	0	1	0	0	2	0	0
107	1	0	1	0	0	2	0	1	1	1	0
108	2	0	1	1	0	1	0	0	2	1	0
Total	7	0	7	1	0	10	2	3	12	10	0

It is no surprise that cumulatively, 12 risk alleles, in 7 family members have been identified, of the 5HHTLPR gene. This gene is known to have association with serotonin, and mood disorders, including depression and Bipolar Illness. Family members report that Bipolar (or manic depression as it was known in the time of their great-grandparents) has been present in females in both maternal and paternal family lineage, for generations. Even family lines created by marriage, involve a history of Bi-polar illness, to potentially be passed down to successive generations.

The Kenneth Blum Institute of Behavior and Neurogenetics reports that more than 4000 research studies involving reports on 5-HTTLPR have been published globally. Neuroscientists find support of variance association with alcohol, cannabis, cocaine, glucose, nicotine, and opioid substance use disorders, and the non-substance, behavioral addiction, gambling.

Proband family members report a history of gambling addiction in prior generations. This gene is also known to be associated with Attention Deficit Hyperactivity Disorder (ADHD) and Post Traumatic Stress Disorder (PTSD). Considering the adult family members polled, three out of six report DSM diagnoses of PTSD and ADHD.

Four out of six have experienced obesity, which is related to food addiction, or binge eating disorder. Three out of six have experienced alcohol abuse problems. Four out of six have experienced mid to long-term tobacco use, and/or admit to having a smoking tobacco addiction. Four out of six have experienced cocaine use. Three out of six admit to cocaine abuse, and participation in substance abuse, or substance use disorder therapy. Two out of six have DSM diagnoses for cocaine substance use disorder or multiple substance use disorder.

The GARs test for two variants of the DRD4 gene. The first is a single nucleotide polymorphism (SNPs). The family sample has a cumulative total of ten C variant risks. Seven of the eight participants have at least one C risk allele, some have two. Participant 105 is the only family member to not carry this mutation.

The second DRD4 mutation variant is a bit more complicated. Rather than being a simple SNP, this is a variable of tandem number repeats, both a short form and long form of insertions and/or deletions of genetic material. In this EF case series #103, the mother of our proband is considered first generation, with the proband and her sister being second generation. This DRD4R variable is found in the third and fourth generation, in both the proband and her sister's line of succession.

The Dopamine Receptor D4 variants have been found to be associated with and/or correlational to alcohol, cannabis, glucose, nicotine, and opioid substance abuse and/or use disorders. This mutation is also associated with behavioral addictions, and other mental health disorders such as Attention Deficit Hyperactivity Disorder, Conduct Disorder, hypersexuality, novelty seeking and pathological aggression. Three of six adults have reported alcohol abuse issues. Three of six have adult ADHD. Four of six adults have experienced hypersexuality at some stage of their developmental history.

The Kenneth Blum Institute of Behavior and Neurogenetics adds an interesting note, that the 7Repeat variant, has been found to date back to at least 40,000 years ago. It is theorized that this "courageous adventuresome spirit" gene was predominately found in the fossil record of nomadic populations much more so than in sedentary populations. In the 21st century, quality parenting has been known to foster appropriate decision making in children as young as four. Future research could be designed to investigate early childhood intervention for those with this novelty seeking gene to possibly offset impulsivity in adolescence and adulthood.

The Monoamine Oxidase A, or MOAO, gene is associated with the MOA-A enzyme which breaks down dopamine, serotonin and norepinephrine. The MOAO risk allele is a mutation, a variable tandem number repeats & insertion/deletion of genetic material found at 3.5R and 4R, on the X chromosome. Carriers of this gene have increased risk, or predisposition for low dopamine function, known as hypo-dopaminergia. This risk allele is associated with alcohol, food, nicotine and opioid addictions, as well as ADHD, novelty seeking and harm avoidance. Our family sample of 8 has collectively ten MOAO risk alleles. EF Case Series 103, 1st and 2nd generation females have the highest concentration, with 2 risk alleles each. Successive, 3rd and 4th generations have only 1 risk allele. Participant 106, a 4th generation grandson of our proband is the only family member to not carry the MAOA variant.

Findings support the hypothesis that the family of our proband, who has RDS risk variance in DRD4, 5HTTLPR, and MOAO genes, would also have similar risk, but not necessarily identical risk. The family of our proband also has additional RDS risk factors, that our proband does not share. Notably there are cumulatively 7 risk alleles for both the COMT and the DRD1gene variances. COMT is associated with stimulant and opioid substance use disorders, eating disorders, anxiety, internet gaming, OCD, panic disorder and oppositional defiant disorder. DRD1 is associated with alcohol and nicotine addiction and novelty/thrill seeking.

Third and fourth generation participants have additional risk factors, not shared by the first and second generation, notably DRD4R (repeat) and the GABRB3. The GABRB3 is associated with alcohol abuse and PTSD. Earlier research review by the author found that the GABRA2 gene has been known to undergo epigenetic mRNA transcription change after early childhood adverse experience of trauma. GABRA2 is also associated with PTDS and future development of Substance Use Disorders.[92-93] Currently primary neuro-geneticists at the Kenneth Blum Institute of Behavior and Neurogenetics are working to expand future versions of the Genetic Addiction Risk Severity test, to include a larger RDS risk profile.[94]

Please see Appendix 2: Genomic Family Tree for The Elle Foundation Case Study Series 103.

The Mother of our proband, suffers from depression. Her uncle has experienced compulsive disorder in this lifetime. Our proband and her sister have experience of substance abuse issues. Both third generation participants have stated they feel as those they have experienced mild forms of Asperger Spectrum and Compulsive Disorder symptomology, without formal DSM diagnosis. Other

third generation RDS symptom manifestation includes hypersexuality, ADHD, and alcoholism.

Seven participants over the age of 15, were administered the popular Myers Briggs Personality Type Indicator test. Advisedly, there are some issues regarding test-retest reliability and validity. Interestingly, three out of seven family members have the very rare, Introvert, Intuitive, Feeling, Judgement (NFJ) personality type, with the youngest who is not old enough to take this test, already showing signs of INFJ traits. The first generation, mother of our proband is ENFJ, but states she is both an extrovert and an introvert. Typically, INFJ types only makes up 1-3 percent of the global population of almost 8 billion population. Also of interest, four of the eight, have experience of attachment disorder issues, report experience of trauma and feeling unsafe in the home environment.[95]

Fourth generation participants #105 and #106 are subjects of the Elle Foundation Research Institute's Case Study Series 104, which is a longitudinal study in prevention of Reward Deficiency Syndrome's manifestation of endotypes, such as substance use disorders, depression and/or other mood disorders, ADHD, internet gaming, anxiety, panic disorder, and the Asperger/Autism Spectrum Disorder. Future Elle Foundation Research Institute study is in design, to collect DNA from the entire extended biological family, n > 50, to investigate the predictability of RDS family risk, as determined by the GARS results of our proband.

SUMMARY

RDS Solutions treat the brain challenges that traditional treatment does not address[96-100], helping the client to achieve dopamine homeostasis. RDS solution interventions such as GARS testing, NAAT, RDS treatment plans, and RDS-Solution Focused Brief Intervention (RDS-SFBI) can help restore families wellbeing, and may be the best hope for preventing and stopping the generational cycle of addiction. The Elle Foundation wishes to assist the addiction recovery industry in its restructure. We have a created a business plan for outsourcing RDS treatment. Psychological education is necessary to create awareness of the underlying neurogenetic factors, as well as the epigenetic influences which cause neurochemical imbalances in the brain.

Basically, genetic mutations can create neurological challenge. Thousands of gene studies, over decades, have created a wealth of concurring evidence in international scientific data bases, allowing for inference of correlation between genes and mental health disorders. Variances are analyzed for potential neurotransmitter channel challenge, in the dopamine, serotonin, norepinephrine, adrenaline, glutamate systems etc.

The Elle Foundation Research Institute reviews GARS results: interpreting neurogenetic challenge, potential pharmacological intervention, and bio-neuro-psychological attributes, in Reward Deficiency Syndrome treatment planning. GARS results provide invaluable information to pinpoint mechanism of action target, for potential pharmaceutical epigenomic intervention. GARS results provide the foundation for proper selection of genome appropriate pro-dopamine regulation, via Neuroadaptagen Amino-Acid Therapy, which has proven beneficial to healing neurogenetically challenged, as well as neurochemically imbalanced brains, ravaged by years, or decades of substance abuse.

All RDS patients will experience dopamine dysfunction, whether this be deficit or surfeit, and require assistance in neurobiological recovery. Phase Two Reward Deficiency Syndrome treatment planning involves a team of professionals, which include a psychiatric geneticist, neuropsychologist, and counselors certified in Precision Behavioral Management, which is the new standard of excellent care, for Reward Deficiency Syndrome/Addiction, in this genomic era of addiction medicine, behavioral health, and psychiatry. Those seeking accreditation in Precision Behavioral Management should consult the United Scientific Group.

Caution is advised against any continued lapses, which reinstate self-medication, using substances, both legal or illicit, or behaviors to induce dopamine surge, or flood dose. This initiates a brain systems re-set, lowering dopamine availability long-term, adding insult to injury. Dopamine surges are also created by binge eating sugar and carbohydrates, and chronic masturbation. It cannot be over emphasized that any pharmaceutical intervention should only be used, in short-term duration, if possible, as these regimens can, and often do, eventually downgrade the very dopamine systems, they attempt to upgrade! Natural, holistic, organic pro-dopamine regulation is always preferred, advised for both short-term and long-term practice. Amino-acid therapy is the perfect brain food, for replenishment and regeneration.

Genetic Addiction Risk Severity (GARS) ™ and Precision Addiction Medicine (PAM) ™, the gold standard of Reward Deficiency Syndrome Solutions ™, assist in procuring the proper treatment for one's genome, to address both the genetic challenges and epigenetic insults of Reward Deficiency Syndrome. In addition, Reward Deficiency Syndrome Solutions ™ provide a pro-dopamine regular, Neuroadaptagen Amino-Acid Therapy ™ (NAAT), supplying the building blocks for brain repair.

The Elle Foundation Research Institute is committed to making RDS solutions available to the public through individual, and family therapeutic intervention. We are establishing phase two RDS treatment protocol to address the neurogenetic, epigenetic, and molecular biology of recovery. We advocate reconceptualizing addiction, by integrating the sciences of addiction medicine and the science of brain reward.

The Elle Foundation will be issuing Awards of Excellence to GAB22 presenters and attendees; Substance Use Disorder treatment centers, both national and international industry conglomerates, who sometimes trade SUD facilities like commodities, as well as the boutique stand-alone treatment center; who participate in RDS paradigm shift awareness training. We wish to unify the recovery field, by adding to and building upon the foundational Minnesota Model which has spawned global treatment initiative, and non-abstinence modalities, such as well as the Harm Reduction Model, by bringing awareness of the scientific advancements of Reward Deficiency Syndrome, a neurodevelopmental model.

CONCLUSIONS

RDS Solutions, Precision Addiction Management (PAM), RDS treatment Plans and RDS-Solution Focused Brief Intervention (RDS-SFBI) therapy are cutting edge resource applications which address both the underlying neurogenetic and epigenetic insults of addiction and comorbidity. The Elle Foundation Research Institute is screening qualifying participants, for future research study, to test the effectiveness of RDS-SFBI, a phase two RDS treatment, after substance use disorder treatments, to address the neurological imbalances which precede addiction and remain after, to interrupt the revolving door of SUD treatment. The original Elle Foundation is dedicated to ending the continuing generational cycle of addiction. GARS testing for SUD and Mental Health Disorder patients, family members and the next generation of children is advised.

STATEMENT OF ACKNOWLEDGEMENT

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Appendix 1: Reward Deficiency Syndrome Severity of Symptom (Rds-Sos) Scale

For the client - Instructions to create your own personal RDS-SOS scale. Begin with the symptom variables on this model, add and/or subtract to make it representative of your unique challenge. This daily inventory increases awareness of the phenomena or experience of RDS. During times of low-level symptom experience, recovery is most likely going well. Clusters of moderate symptoms will provide clues for areas which require your attention. High level is cause for alarm to send out an SOS. High levels indicate neurological dysfunction which drives the engine of relapse.

This instrument introduces two new terms, Anhedonia and Dysphoria, which are RDS symptoms. They relate to the phenomena, or experience of dopamine depletion and deregulation. Hedonia is generally defined as pleasure, enjoyment, comfort. Anhedonia is the opposite, negative effect. Think of Anhedonia as suffering. Sometimes it is extreme as in an inability to mitigate pain. Other times it is subtle, a lack of ease, not feeling comfortable in your own skin. You might experience Anhedonia as a sensation or feeling that something is not right, like something is lacking. On the hedonic scale, Anhedonia is below zero.

Euphoria is the excited state of great happiness. Dysphoria is the opposite, the agitated state of extreme unhappiness, displeasure. Sustained ongoing combined experience of anhedonia and dysphoria can signal great trouble, like warning that a neurological storm is coming. One analogy likens anhedonia to invisible leaking gas. Dysphoria is the match of irritability, agitation and frustration which sparks an ignition of explosive rage, often in the form of self-medicating, impulsivity, and self-harm. Neurologically this is what dopamine depletion feels like.

A cluster of high-level severity symptoms, like Anhedonia, Dysphoria, craving, impulsivity and pain intensity can be a tipping or breaking point, the proverbial last straw. At this point, it may be too late to send out an SOS. Addiction, chronic abstinence and relapse symptoms are just some RDS expressions. RDS symptoms may exist from birth, before addiction begins, and linger after addiction is over. Along the lifespan, RDS symptomatic expression may change over time, leading to dementia or cognitive decline possibly due to a dysregulation of neurotransmitter function and net release of dopamine in the BRC.

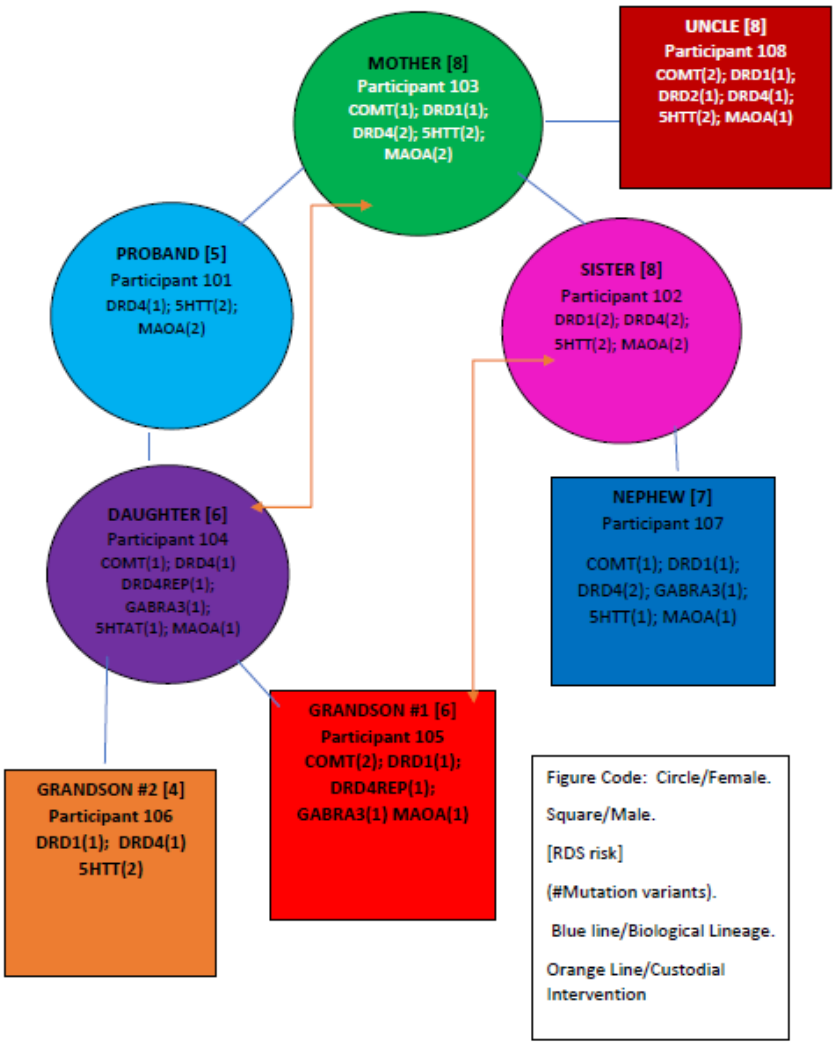
Dopamine dysregulation underlies neurological disorders, like OCD, ADHD, PTSD, Depression, Asperger, Tourette and even Parkinson's disease. Dopamine deficiency symptoms may be is experienced as stiff joints, lack of fluidity or grace in movement, messy illegible handwriting, Restless Leg Syndrome, which is Pre-Parkinson's or the involuntary tics of Tourette.

This instrument can assist a RDS candidate in developing self-management skill for achieving and maintaining dopamine homeostasis. It helps track a patient's progress, to keep a record of one's experience for future reference. It alerts the individual to high level symptom severity danger zones. The RDS-S0S test measurement instrument is used in Reward Deficiency Syndrome Solution Focused Brief Therapy, which explains RDS through new perspective, framing addiction in a new paradigm, through which to see neurological challenge in a new light, unrelated to twelve step theory, and fellowship. This instrument does not at all negate the 12 step doctrines and fellowship and works well with the 12 steps.

Basically, the proband circles the level of severity of the symptom. For example, if the proband is not experiencing this symptom, circle zero. In contrast, if the proband is experiencing this symptom, rate its severity from 1 to 10. Then when all the symptoms have been assessed, add total score. Keep each daily inventory log in a binder for future reference, to gage progress and/or remission over time. It is understood that not all individuals will have all of these known RDS symptoms.

REWARD DEFICIENCY SYNDROME SEVERITY OF SYMPTOM SCALE (RDS-SOS)

Symptom			Low Level			Moderate Level			High Level		
Nicotine craving	0	1	2	3	4	5	6	7	8	9	10
Alcohol craving	0	1	2	3	4	5	6	7	8	9	10
Cocaine craving	0	1	2	3	4	5	6	7	8	9	10
Sugar craving	0	1	2	3	4	5	6	7	8	9	10
Caffeine craving	0	1	2	3	4	5	6	7	8	9	10
Anhedonia	0	1	2	3	4	5	6	7	8	9	10
Dysphoria	0	1	2	3	4	5	6	7	8	9	10
Anxiety	0	1	2	3	4	5	6	7	8	9	10
Restlessness	0	1	2	3	4	5	6	7	8	9	10
Impulsiveness	0	1	2	3	4	5	6	7	8	9	10
Irritability	0	1	2	3	4	5	6	7	8	9	10
Depression	0	1	2	3	4	5	6	7	8	9	10
Sleep problems	0	1	2	3	4	5	6	7	8	9	10
Fatigue	0	1	2	3	4	5	6	7	8	9	10
Hyper Stress	0	1	2	3	4	5	6	7	8	9	10
Emotional Outburst	0	1	2	3	4	5	6	7	8	9	10
Panic	0	1	2	3	4	5	6	7	8	9	10
Frustration	0	1	2	3	4	5	6	7	8	9	10
Agitation	0	1	2	3	4	5	6	7	8	9	10
Itchiness	0	1	2	3	4	5	6	7	8	9	10
Hives	0	1	2	3	4	5	6	7	8	9	10
Rash	0	1	2	3	4	5	6	7	8	9	10
Binge Eating	0	1	2	3	4	5	6	7	8	9	10
ADHD	0	1	2	3	4	5	6	7	8	9	10
PTSD	0	1	2	3	4	5	6	7	8	9	10
OCD	0	1	2	3	4	5	6	7	8	9	10
Bipolar Swings	0	1	2	3	4	5	6	7	8	9	10
Isolation	0	1	2	3	4	5	6	7	8	9	10
Worry	0	1	2	3	4	5	6	7	8	9	10
Using Thoughts	0	1	2	3	4	5	6	7	8	9	10
Pain Intensity	0	1	2	3	4	5	6	7	8	9	10
Angry	0	1	2	3	4	5	6	7	8	9	10
Fearful	0	1	2	3	4	5	6	7	8	9	10
Negative Interaction	0	1	2	3	4	5	6	7	8	9	10



Appendix 2: Genomic Family Tree For The Elle Foundation Case Study Series 103.