

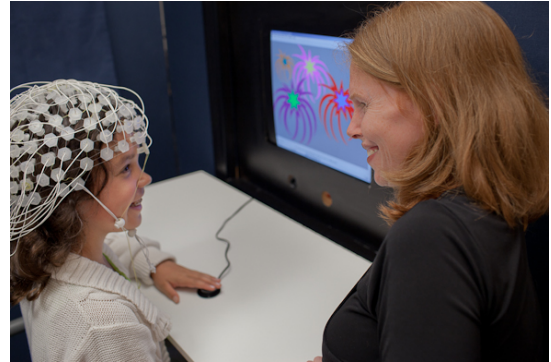
Autism Clinical Care and Research

UW Department of Psychiatry and Behavioral Sciences

2015 & 2016

The Department of Psychiatry and Behavioral Sciences at the University of Washington is committed to improving the lives of individuals living with autism through excellent patient care, innovative research, and inspired teaching. Our work transcends silos and brings people and ideas together.

Many of our faculty work at the Seattle Children's Autism Center, an integral addition to the autism landscape in Seattle. Since its inception in 2009, the Center has served as a single point of entry to the Seattle Children's Hospital system for families impacted by autism and has provided state-of-the-art clinical assessments and treatments for families and patients. Eight years later, it is one of the largest autism programs in the world serving over 4,000 patients each year and orchestrating 20,000 annual visits.



In addition to providing cutting-edge clinical services, UW Psychiatry faculty are international leaders in the development of innovative treatments and translational research devoted to advancing clinical care. Extramural research funding is significant, allowing faculty to drive autism advances and elevate Seattle as an autism research powerhouse. Between 2010 and 2016, department faculty contributed to raising nearly \$40 million for autism research.

The time is ripe to reach for the next level of autism care, research, and education in the Pacific Northwest. As we look to the future, we envision increased collaboration with clinicians at the Seattle Children's Autism Center, the Seattle Children's Alyssa Burnett Adult Life Center, UW Autism Center, the Adult Autism Clinic at UWMC-Roosevelt, and the Haring Center for Research and Training in Inclusive Education and researchers at Seattle Children's Research Institute and the UW Center on Human Development and Disability. We want to leverage operational efficiencies by effectively linking with community resources, and most importantly, by integrating clinicians and scientists caring for individuals with autism across the University. Looking beyond Seattle, we need to integrate and expand autism work across the Puget Sound – creating a source of consultation and support for health care providers who treat individuals with autism in Washington and other WWAMI states and who have little to no access to specialty care.

We invite you to learn more about our work in the following pages.

Sincerely,

Raphael Bernier, PhD
Sara Jane Webb, PhD

Autism Clinical Care and Research

UW Department of Psychiatry and Behavioral Sciences

Annual Report

Mission

Our goal is to improve the lives of individuals with autism and other neurodevelopmental disorders by conducting state-of-the-art research into the etiology, course, and treatment of developmental disabilities; by translating and disseminating scientific findings to the community; and by sustaining an active training and learning environment for new clinical researchers in the field.

Who We Are

Psychologists and psychiatrists who specialize in autism spectrum disorder and who hold academic appointments within the Department of Psychiatry and Behavioral Sciences. Areas of expertise include:

- Research on the etiology, neuroscience and clinical care of neurodevelopmental disorders
- EEG, eye tracking, neuroimaging and 3-D graphics
- Assessment, diagnosis and treatment of ASD for children 18 months to adulthood
- Genetic factors contributing to restricted and repetitive behavior
- Genomic and epigenomic studies of neurodevelopmental disorders
- Optimization of clinical settings to best meet the diagnostic needs of the community
- Parent Training

Where We Work

Our work spans multiple locations including the Seattle Children's Autism Center, the Seattle Children's Center for Child Health, Behavior and Development, and the Seattle Children's Center on Integrative Brain Research; the UW Center on Human Development and Disabilities; and the University of Washington Medical Center.

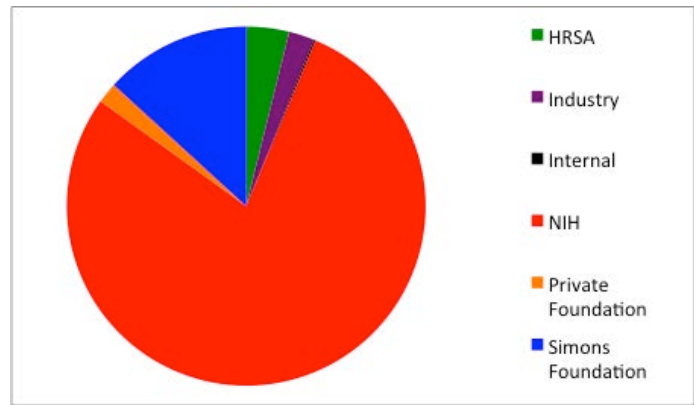
The Seattle Children's Autism Center (SCAC) is affiliated with the Seattle Children's Child Psychiatry Department, under the interim direction of Raphael Bernier, PhD. The Autism Center is a 17,000ft² outpatient clinic housed in a dedicated building. The SCAC offers a full range of services including diagnosis and evaluation of neurodevelopmental and congenital disabilities, speech and language assessment, medical

evaluation, treatment services, and parent education and support. SCAC opened in August 2009 and consists of experts from pediatrics, psychiatry, psychology, neurology, nursing and social work. In 2015, SCAC responded to over 26,000 calls and provided services to 4,386 unique patients through over 18,000 clinic visits.



Research Programs

We have sustained a remarkable level of research funding for the past six years. Grants secured by the UW Department of Psychiatry and Behavioral Sciences for ASD research totaled \$38 million from 2010 to 2016 with major increases in yearly funding in 2011 and 2012. Approximately 75% of the funding comes from public institutions (National Institutes of Health) and 15% comes from private foundations. We have 13 active research projects funded for FY2016 (see Appendix A).



We have authored nine research papers nationally recognized as “Top Ten” Papers of the Year in journals of the highest caliber including *Cell*, *Science*, and *Nature* (see Appendix B). We published 24 research papers in 2015 and have published 43 papers in 2015-2016 (see Appendix C). We have contributed to the dissemination and discussion of our research through national and international conferences, including presentations from faculty, students, and staff at the International Meeting for Autism Research in May, 2016.

As part of a research project directed by Dr. Bernier and Dr. Gerdts, two research recruitment specialists are co-located at the SCAC and integrated with clinic administration with the specific job of increasing patient registration in the research registry and on-site recruitment. These study coordinators provide information about autism research projects led by our faculty to patients prior to and after clinical appointments, giving every patient the opportunity to participate in and benefit from research. Clinic recruitment into the registry has the added benefit of diversifying our potential research pool by capitalizing on the ethnically and socioeconomically varied patient population served at the Center.

Training Programs

We have an active and robust training and learning environment for new clinical researchers in the field. We mentor at every stage of a student’s progression, from undergraduate to graduate to postdoctoral fellow. Our trainees have received independent training grants from the National Institutes of Health, Autism Speaks, and the Autism Science foundation. See Appendix D for a list of our current trainees.



Webb lab at Seattle Children's Research Institute: Sara Webb, Megha Santhosh, Casey Guiland, Erin Libsack, Emily Neuhaus, Anna Kresse, Sarah Corrigan, Raphael Bernier.



Bernier lab: Row 1 front Judy Han, Emily Fox, Micah Pepper, Sandy Trinh, Caitlin Hudac, Rachel Earl, Daisy Ma; Row 2 middle Meaghan Thompson, Trent DesChamps, Megan Frye, Shelley Barber, Anne Wolken, Brenna Boyd, Kira Hamer, Raphael Bernier; Row 3 back Jay Martini, Bri Slattery, Candace Rhoads, Heena Panjwani, Jen Gerdts, Anna Diss, Ari Wallace, Alana Peters, Ghina Haidar.

Leadership



Raphael Bernier, PhD is the Interim Director of the Seattle Children’s Autism Center and an Associate Professor in the UW Department of Psychiatry and Behavioral Sciences. Raphe is a licensed Child Clinical Psychologist with a clinical focus on the diagnostic process and characterization of ASD. Raphe’s research lab, located at the UW Center on Human Development and Disabilities, focuses on the etiology, neuroscience, and clinical care of neurodevelopmental disorders. Raphe currently is the PI for several Simons Foundation and NIH funded projects and co-directs the Clinical Core for the NIH Autism Biomarkers Consortium. Seven of Raphe’s research publications have been noted as leading contributions to the field by the Simons Foundation, Autism Speaks, and the HHC Interagency Autism Coordinating Council. Raphe received the 2016 UW Psychiatry & Behavioral Sciences Wayne J. Katon Outstanding Mentor Award.



Sara Jane Webb PhD, is the Director of the Seattle Children’s Autism Research Program, Director of the CHDD Collaborative Research Area in Biology of Autism, and an Associate Professor in the UW Department of Psychiatry and Behavioral Sciences. Sara’s research lab, located at the SCRI Center on Child Health, Behavior, and Development, uses EEG, eye tracking, neuroimaging and behavioral measures to better understand social attention, perception, learning and memory in children with ASD and other neurodevelopmental disorders. Sara currently directs the Data Acquisition and Analytic Core for the NIH Autism Biomarkers Consortium and is the Director of the Seattle Site for the Gender Exploration of Neurogenetics and Development to Advance Autism Research (GENDAAR) study. Sara received the 2015 UW Mary Gates Undergraduate Research Mentor Award.

Department of Psychiatry and Behavioral Sciences Faculty with Expertise in Autism Clinical Care and Research



Zoran Brkanac, MD is an Associate Professor in the UW Department of Psychiatry and Behavioral Sciences. Zoran is a Child Psychiatrist and his clinical program focuses on the diagnosis and treatment of children with autism and neurodevelopmental disorders. Zoran’s lab is located at the UW with a focus on the genetics neurodegenerative disorders such as Alzheimer’s, and neurodevelopmental disorders such as learning disability and autism spectrum disorder.



Soo-Jeong Kim, MD is an Associate Professor in the UW Department of Psychiatry and Behavioral Sciences. Soo is a Child Psychiatrist and the Medical Director of the Seattle Children’s Autism Center. Soo’s clinical program focuses on ASD and Prader-Willi syndrome and genetic factors contributing to restricted and repetitive behavior. Soo’s lab is located at SCRI Center on Integrative Brain Research, with a focus on genomic and epigenomic studies of neurodevelopmental disorders.



Jeffrey Munson, PhD is a Research Associate Professor in the UW Department of Psychiatry and Behavioral Sciences. Jeff is a Child Clinical Psychologist studying variability in the development of children with autism spectrum disorder as well as uses innovative technology (eye-tracking and 3-D graphics) to better understand children with limited or inconsistent behavioral responses.



Jennifer Gerdts, PhD is an Assistant Professor in the UW Department of Psychiatry and Behavioral Sciences. Jen is a licensed Child Clinical Psychologist and her clinical program focuses on diagnostic assessment children with ASD and rare genetic events. Jen's research is focused on better understanding of the phenotype of autism in relation to genetics, as well as optimizing clinical settings to best meet the diagnostic needs of the community.



Mendy Minjarez, PhD is an Assistant Professor in the UW Department of Psychiatry and Behavioral Sciences. Mendy is a licensed Child Clinical Psychologist and Director of the Seattle Children's Autism Center Applied Behavior Analysis Early Intervention Program. Her clinical and research programs focus on assessment, diagnosis and treatment of autism and developmental disabilities, Pivotal Response Training (PRT) child treatment and parent training.

Appendix A: Current Funding (2015-2016)

NIMH U19 MH108206, McPartland (PI-Yale), Webb (PI, SCRI), Bernier (PI, UW) 7/15-6/19

U19 Consortium on Biomarker and Outcome Measures of Social Impairment for Use in Clinical Trials in Autism Spectrum Disorders

Goal: Longitudinal study of children with ASD using EEG and ET to develop biological markers for treatment trials.

- Bernier PI @ UW, Co-Director Clinical Core
- Webb PI @ SCRI Data Acquisition and Analytic Core & member of Steering Board

SFARI, O'Roak (PI-OHSU), Bernier (PI-UW) 6/14-5/17

Investigating the role of somatic mutations in autism spectrum disorders

Goals: To identify somatic mutations utilizing a twin ASD sample.

- Bernier PI @ UW
- Webb Co-Investigator

NIH R01 MH100047-01A1, Bernier (PI) 2/14-2/19

Phenotypic Characterization of Gene Disrupting Mutations in ASD

Goals: Characterization of gene mutations in the beta-catenin pathway using behavioral, cognitive, and neurophysiologic measures.

- Bernier PI
- Webb, Munson Co-Investigator

Korean Research Foundation, Chung (PI) / Webb (PI, Contract) 9/13-12/16

Mechanisms of Face Understanding

Goals: To investigate the role of community and self race in facial emotion adaptation effect in Korean and American children with ASD.

- Webb PI @ SCRI

NIH R01 MH10028 Network, Pelphrey (PI) / Webb (PI, Subcontract) 9/12-8/17

Multimodal Developmental Neurogenetics of Females with ASD

Goals: To identify sex differences in brain structure, function, connectivity, and temporal dynamics in ASD.

- Bernier Network Director of Clinical Phenotype
- Webb PI @ SCRI & Network Director of Electrophysiology

Simons VIP Bernier (PI) 8/10-7/16

Goals: To better understand the interaction between genetic structural variants, other genes, the environment, and neurodevelopment.

- Bernier PI

SFARI SPARK (Bernier, PI) 11/15-3/19

Goals: To develop a cohort of 50000 families with ASD to aid in gene discovery and clinical trials.

- Bernier PI

Simons Simplex Collection (Bernier, PI) 04/07-3/17

Goals: To enhance the pace of gene discovery in ASD.

- Bernier PI

NIMH 1R01MH092367 (Brkanac, PI) 02/11 – 11/15

Next Generation Gene Discovery in Familial Autism

Goals: This proposal seeks to perform massively parallel whole exome sequencing and array comparative genomic hybridization to identify novel genes for familial Autism.

- Brkanac PI
- Bernier Co-Investigator

NEU 2566 FXS001 (King, PI) 04/15 – 12/17

Neuren Pharmaceuticals: A Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Fixed-Dose Study of NNZ-2566 in Fragile X Syndrome

Goals: To investigate the safety and tolerability of medication treatment in adolescent and adult males with Fragile X Syndrome.

- King PI

NIH U01 HD 073984 (Sikich, PI) 7/12-05/17

Study of Oxytocin in Autism to Improve Reciprocal Social Behaviors (SOARS-B)

Goals: To assess the efficacy and safety of intranasal oxytocin in the treatment of core symptoms of autism in children between ages of 3 and 17 years.

- King PI @ SCRI
- Kim Co-Investigators

HHS-NIH-DA-12-24 (McCracken, PI) 09/13-11/15

New experimental medicine studies: fast-fail trials of autism spectrum disorders

Goals: Network established to assess target engagement and potential efficacy of novel therapeutics in ASD.

- King PI @ SCRI
- Webb, Bernier, Kim Co-Investigators

RO5285119 in ASD (King, PI) 10/13 – 12/16

Roche TCRC, Inc.

Goals: A multi-center, randomized, double-blind, 12-week, parallel group, placebo-controlled proof of concept study to investigate the efficacy and safety of RO5285119 in individuals with autism spectrum disorders (ASD)

- King PI

Appendix B: Nationally Recognized “Top Ten” Papers of the Year

2015 (Autism Science Foundation & Simons Foundation):

Krumm et al (2015). Excess of rare, inherited truncating mutations in autism. *Nature Genetics*, 47(6), 582-588.

- Recognized by Autism Speaks & Simons Foundation, this paper identified rare, inherited events contributing to ASD and underscoring the female protective effect phenomenon.

2014 (Autism Speaks 2014 & Simons Foundation):

Bernier et al (2014). Disruptive CHD8 mutations define a subtype of autism early in development. *Cell*, 158, 263-76.

- Recognized by Autism Speaks & Simons Foundation, this paper identified the first genetic subtype in autism.

O’Roak et al (2014). Recurrent de novo mutations implicate novel genes underlying simplex autism risk. *Nature Communication*, 5, 5595.

- Recognized by Autism Speaks & Simons Foundation, this paper aided in gene discovery by identifying several new autism associated genes.

2012

O’Roak et al (2012). Massively Multiplex Targeted Sequencing Identifies Genes Recurrently Disrupted in Autism Spectrum Disorders. *Science*, 338, 1619-1622.

- Recognized by the Simons Foundation, this paper applied targeted sequencing to identify recurrent gene disruptions in autism.

Dawson et al. (2012). Early Behavioral Intervention is Associated With Normalized Brain Activity in Young Children With Autism. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51, 11, 1150-1159.

- Recognized by Autism Speaks and Time Magazine, this paper provided evidence of normalized brain activity in children with ASD treated with the Early Start Denver Model behavioral intervention

2011

Lord et al (2011). A multi-site study of the clinical diagnosis of different autism spectrum disorders, *Archives of General Psychiatry*, 69(3), 306-313.

- Recognized by NIMH, Autism Speaks & Simons Foundation, this paper identified challenges to the behaviorally defined subtypes of autism providing rationale for the transition to the DSM-5’s autism spectrum disorder diagnosis.

O’Roak et al (2012). Sporadic autism exomes reveal a highly interconnected protein network of de novo mutations. *Nature*, 485, 246-50.

- Recognized by NIMH, Autism Speaks & Simons Foundation, this paper applied exome sequencing in a large sample of children with autism to reveal de novo, gene-disrupting mutations.

O’Roak et al (2011). Exome sequencing in sporadic autism reveals severe de novo mutations. *Nature Genetics*, 43, 585-589.

- Recognized by NIMH, Autism Speaks & Simons Foundation, this paper was the first exome sequencing study of autism and identified several de novo gene-disrupting mutations in autism.

2009

Wang et al (2009). Common genetic variation in the intergenic region between CDH10 and CDH9 is associated with susceptibility to autism spectrum disorders. *Nature*, 459(7246), 528-33.

- Recognized by Time Magazine, this paper reported the results of a collaborative effort to identify common genetic variation associated with autism.

Appendix C: Recent Publications 2015 & 2016

1. **Bernier R**, Steinman KJ, Reilly B, Wallace AS, Sherr EH, Pojman N, Mefford HC, **Gerdts J**, Earl R, Hanson E, Goin-Kochel RP, Berry L, Kanne S, Snyder LG, Spence S, Ramocki MB, Evans DW, Spiro JE, Martin CL, Ledbetter DH, Chung WK; Simons VIP consortium. (2016). Clinical phenotype of the recurrent 1q21.1 copy-number variant. *Genet Med.* 18(4):341-9.
2. **Bernier, R.**, Steinman, K., Reilly, B., Earl, R., Wallace, A., Sherr, E., Pojman, N., Mefford, H., **Gerdts, J.**, Hanson, E., Goin-Kochel, R., Green Synder, L., Spence, S., Ramocki, M., Martin, C., Ledbetter, D., Spiro, J., Chung, W., & Simons VIP consortium (2015). Clarifying the clinical phenotype of recurrent copy number variation of chromosome 1q21.1. *Genetics in Medicine.*
3. Chapman, N., Nato, A., **Bernier, R.**, Ankenman, K., Sohi, H., **Munson, J.**, Patowary, A., Blue, E., **Webb, S.J.**, Coon, H., Raskind, W., **Brkanac, Z.**, & Wijsman, E. (2015). Whole Exome sequencing in extended families with autism spectrum disorder implicates four candidate genes. *Human Genetics*, 134(10), 1055-168.
4. Charman, T., Brian, J., Carter, A., Carver, L., Chawarska, K., Curtin, S., Dobkins, K., Elsabbagh, M., Georgiades, S., Hertz-Picciotto, I., Hutman, T., Iverson, J., Jones, E.J., Landa, R., Macari, S., Messinger, D., Nelson, C.A., Ozonoff, S., Saulnier, C., Stone, W., Tager-Flusberg, H., **Webb, S.J.**, Yirmiya, N., Young, G., Zwaigenbaum, L. (2016). Non-ASD outcomes at 36 months in siblings at familial high-risk for autism spectrum disorders (ASD): A baby siblings research consortium (BSRC) study. *Journal of Autism and Developmental Disabilities.*
5. D'Angelo, D., Lebon, S., Chen, Q., Martin-Brevet, S., Green Snyder, L., Hippolyte, L., Hanson, E., Maillard, A., Faucett, W.A., Macé, A., Pain, A., **Bernier, R.**, Chawner, S., Albert, D., Andrieux, J., Aylward, E., Baujat, G., Caldeira, I., Conus, P., Ferrari, C., Forzano, F., Gérard, M., Goin-Kochel R., Grant, E., Hunter, J., Isidor, B., Jacqueline, A., Jønch, A., Keren, B., Lacombe, D., Caignec, C., Martin, C., Männik, K., Metspalu, A., Mignot, C., Mukherjee, P., Owen, M., Passeggeri, M., Rooryck, C., Rosenfeld, J., Spence, S., Steinman, K., Tjernagel, J., Van Haelst, M., Shen, Y., Draganski, B., Sherr, E., Ledbetter, D., van den Bree, M., Beckmann, J., Spiro, J., Reymond, A., Jacquemont, S., Chung, W., for the ECHO study, the 16p11.2 European Consortium and the Simons VIP Consortium. (2016). Defining the effect of the 16p11.2 duplication on cognition, behavior, and medical comorbidities. *JAMA Psychiatry* 73(1), 20-30.
6. de Vries, P.J., Whittemore, V.H., Leclezio, L., Byars, A.W., Dunn, D., Ess, K.C., Hook, D., **King, B.H.**, Sahin, M., & Jansen, A. (2015). Tuberous sclerosis associated neuropsychiatric disorders (TAND) and the TAND Checklist. *Pediatr Neurol.* 52(1):25-35.
7. Duyzend MH, Nuttle X, Coe BP, Baker C, Nickerson DA, **Bernier R**, Eichler EE. (2016). Maternal Modifiers and Parent-of-Origin Bias of the Autism-Associated 16p11.2 CNV. *Am J Hum Genet.* 98(1):45-57.
8. Duyzend, M., Nuttle, X., Coe, B., Baker, C., Giannuzzi, G., Reymond, A., Nickerson, D., **Bernier, R.**, Eichler, E. (2016). Genetic modifiers and parent-of-origin biases of the autism 16p11.2 CNV. *American Journal of Human Genetics.* 98(1), 45-57.
9. Faja, S., Clarkson, T., **Webb, S.J.** (2016). Neural and behavioral suppression of interfering flankers by children with and without autism spectrum disorders. *Neuropsychologia*, 90(pt A): 251-261.
10. Faja, S., Dawson, G., Aylward, E., Wijsman, E., & **Webb, S. J.** (2016). Early event-related potentials to emotional faces differ for adults with autism spectrum disorder and by serotonin transporter genotype. *Clinical Neurophysiology*, 127(6): 2436-47
11. Faja, S., Dawson, G., Sullivan, K., Estes, A., & **Bernier, R.** (2016). Executive function predicts the development of play skills for verbal preschoolers with autism spectrum disorders. *Autism Research*, 9(12): 1274-1284.
12. Garman, H.D., Spaulding, C.J., **Webb, S.J.**, Mikami, A.Y., Morris, J. P., & Lerner, M.D. (2016). Wanting it too much: The unexpected effect of social motivation on facial emotion recognition. *Child Psychiatry and Human Development*, 47(6): 890-902.
13. Gengoux, G.W., Berquist, K.L., Salzman, E., Schapp, S., Phillips, J.M., Frazier, T.W., **Minjarez, M.B.** & Hardan, A.Y. (2015). Pivotal response treatment parent training for autism: Findings from a 3-month follow-up evaluation. *Journal of Autism and Developmental Disorders*, 45(9): 2889-98.

14. Green Snyder, L., D'Angelo, D., Chen, Q., **Bernier, R.**, Goin-Kochel, R.P., Wallace, A.S., **Gerdts, J.**, Kanne, S., Berry, L., Blaskey, L., Kuschner, E., Roberts, T., Sherr, E., Martin, C.L., Ledbetter, D.H., Spiro, J.E., Chung, W.K., Hanson, E.; Simons VIP consortium. (2016). Autism Spectrum Disorder, Developmental and Psychiatric Features in 16p11.2 Duplication. *Journal of Autism and Developmental Disorders*, 46(8): 2734-48.
15. Hanson E, Bernier R, Porche K, Jackson FI, Goin-Kochel RP, Snyder LG, Snow AV, Wallace AS, Campe KL, Zhang Y, Chen Q, D'Angelo D, Moreno-De-Luca A, Orr PT, Boomer KB, Evans DW, Kanne S, Berry L, Miller FK, Olson J, Sherr E, Martin CL, Ledbetter DH, Spiro JE, Chung WK; Simons Variation in Individuals Project Consortium. (2015). The cognitive and behavioral phenotype of the 16p11.2 deletion in a clinically ascertained population. *Biol Psychiatry*. 77(9):785-93.
16. Hardan, A.Y., Gengoux, G.W., Berquist, K.L., Libove, R.A., Ardel, C.M., Phillips, J., Frazier, T.W. & **Minjarez, M.B.** (2015). A randomized controlled trial of Pivotal Response Treatment Group for parents of children with autism. *Journal of Child Psychology and Psychiatry*, 56(8): 884-92.
17. Higdon, R., Earl, R., Stanberry, L., Hudac, C., Montague, E., Stewart, E., Janko, I., Choineire, J., Broomall, W., Koler, N., **Bernier, R.**, & Kolker, E. (2015). The promise of multi-omics and clinical data integration to identify and target personalized health care approaches in ASD. *OMICS: A Journal of Integrative Biology*, 19(4), 197-208.
18. Hippolyte, L., Maillard, A., Rodriguez-Herreros, B., Pain, A., Martin-Brevent, S., Ferrari, C., Conus, P., Macé, A., Hadjikhani, N., Metspalu, A., Reigo, A., Kolk, A., Mannik, K., Barker, M., Isidor, B., LeCaignec, C., Mignot, C., Schneider, L., Motttron, L., Keren, Albert, D., Doco-Fenzy, M., Gérard, M., **Bernier, R.**, Goin-Kochel, R., Hanson, E., Green-Snyder, L., 16p11.2 European Consortium, The Simons VIP Consortium, Ramus, F., Beckmann, J., Draganski, B., Reymond, A., & Jacquemont, S. (2015). The number of genomic copies at the 16p11.2 locus modulates language, verbal memory and inhibition. *Biological Psychiatry*.
19. Hudac, C., Kresse, A., Aaronson, B., Deschamps, T., **Webb, S.J.**, **Bernier, R.** (2015). Modulation of mu attenuation to social stimuli in children and adults with 16p11.2 deletions and duplications. *Journal of Neurodevelopmental Disorders*, 7(1), 25.
20. Jones, E.J., Venema, K., Earl, R., Lowy, R., Barnes, K., Estes, A., Dawson, G., & **Webb, S.J.** (2016). Reduced engagement with social stimuli in 6-month-old infants with later ASD. *Journal of Neurodevelopmental Disorders*, 8(7).
21. Jones, E.J., Venema, K., Lowy, R., Early, R., **Webb, S.J.** (2015). Developmental changes in infant brain activity during naturalistic social experiences: Video versus live interactions. *Developmental Psychobiology*, 57(7), 842-853.
22. Jones, E.J.H., Venema, K., Earl, R., Lowy, R., **Webb, S.J.** (2016). Infant social attention: An intermediate phenotype of ASD? *Journal of Child Psychology and Psychiatry*.
23. Krumm, N., Turner, T., Baker, C., Vives, L, Mohajeri, K., Witherspoon, K., Raja, A., Coe, B., Stessman, H., He, Z., Leal, S. **Bernier, R.**, Eichler, E. (2015). Excess of rare, inherited truncating mutations in autism. *Nature Genetics*, 47(6), 582-588.
24. Mazina, V., **Gerdts, J.**, Trinh, S., Ankenman, K., Ward, T., Dennis, M., Girirajan, S., Eichler, E., & **Bernier, R.** (2015). Interactive effects of copy number variation and maternal infection on autism impairment. *Journal of Developmental and Behavioral Pediatrics*, 36(2), 61-67.
25. McPartland, J., **Bernier, R.**, & South, M. (2015). Realizing the Translational Promise of Psychophysiological Research in ASD. *Journal of Autism and Developmental Disorders*, 45(2), 277-282. PMID: 239751545
26. Messinger, D. S., Young, G. S., **Webb, S. J.**, Ozonoff, S., Bryson, S. E., Carter, A., Carver, L., Charman, T., Chawarska, K., Curtin, S., Dobkins, K., Hertz-Picciotto, I., Hutman, T., Iverson, J. M., Landa, R., Nelson, C. A., Stone, W. L., Tager-Flusberg, H., & Zwaigenbaum, L. (2016). Commentary: sex difference differences? A reply to Constantino. *Molecular Autism*, 7(1), 1-3.
27. Messinger, D., Young, G., **Webb, S.J.**, Ozonoff, S., Bryson, S., Carter, A., Carver, L., Charman, T., Chawarska, K., Curtin, S., Dobkins, K., Hutman, T., Iverson, J., Landa, R., Nelson, C.A., Stone, W., Tager-Flusberg, H., & Zwaigenbaum, L. (2015). Early sex differences are not autism-specific: A baby siblings research consortium study. *Molecular Autism*, 6, 32.
28. Moreno-De-Luca, A., Evans, D., Boomer, K., Hanson, E., **Bernier, R.**, Goin-Kochel, R., Myers, S., Challman, T., Moreno-De-Luca, D., Slane, M., Hare, A., Chung, W., Spiro, J., Martin, C. & Ledbetter, D. (2015) Clinical

variability in individuals with 16p11.2 deletions is partially explained by parental cognitive, behavioral, and motor profiles. *JAMA Psychiatry*, 72(2):119-26.

29. Navot, N., Jorengson, A., Toth, K., & **Webb, S.J.** (2016). Family planning and family vision in mothers after diagnosis of a first child with ASD. *Autism: International Journal of Research and Practice*, 20(5):605-615.
30. Nelson, T., **Bernier, R.**, Sheller, B., & Clives, F. (2015). Educational and therapeutic behavioral approaches to providing dental care for patients with autism spectrum disorder. *Special Care in Dentistry*.
31. Neuhaus, E., **Bernier, R.**, & Beauchaine, T. (2015). Electrodermal Response to Reward and Non-Reward Among Children with Autism. *Autism Research*, 8(4), 357-70.
32. Neuhaus, E., **Bernier, R.**, & Beauchaine, T. (2016). Children with Autism Show Altered Autonomic Adaptation to Novel and Familiar Social Partners. *Autism Research*, 9(5): 579-91.
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Appendix D: Current Trainees

Postdoctoral Fellows

Emily Neuhaus, PhD is a licensed Child Psychologist and Autism Speaks Meixner Translational Postdoctoral Fellow. Her research program focuses on understanding the role of social reward and motivation in social ability and disability. Within the Webb lab, she is working to understand the role of child sex in brain development and autism behavior. In 2016, she joined the clinical program staff at Seattle Children's Autism Center while continuing to work in research at SCRI.

Caitlin Hudac, PhD is a developmental psychologist. Her research program focuses on developing biomarkers for understanding social communication in young children and how early social communication is related to later social disability. Within the Bernier lab, she is working to develop eye tracking and EEG biomarkers for use with children with specific genetic mutations.

Petya Radoeva MD/PhD is a psychiatry resident (c/o 2018). Her research program focuses on neural networks related to social cognition in individuals with ASD. Within the Webb lab, she is investigating sex and age differences in white matter tracts using diffusion tensor imaging. This year, she will be expanding her work to examine lifespan functioning in adults with ASD.

Graduate Students

Ben Aaronson is a 5th year doctoral student with a research focus on the impact of behaviorally based treatment on neural indices of social cognition. **Rachel Earl** is a 4th year doctoral in School Psychology focusing quantifying the deleterious effects of the 1q21.1 CNV on social functioning as well as studying the family phenotype of DYRK1A mutations. **Krystle Jalalian** is a doctoral student at Birkbeck University of London in Applied Linguistics studying bilingualism in children with ASD. **Sandra Nauman** is a masters of science student from the University of Technology Dresden Germany who is studying EEG acquisition and analytics in autism. **Ariana Patrick** is a masters of science student from Vanderbilt University who is studying sex differences in anxiety and attention problems in individuals with ASD. **Vievian Yeung** is receiving her Masters in Education and the BCBA program from the UW in 2016. **Sandy Trinh** is a 2nd year doctoral student focusing on examining the contribution of timing of gene expression on the presence of regression in autism. Additional UW doctoral students include: **Lizzy Karp** (3rd year), **Shelley Barber** (2nd year), **Ghina Haidar** (1st year), **Ruqian Ma** (1st year), and **Candace Rhoades** (1st year).

Undergraduate Students

Our research internship programs currently involve over 25 undergraduates from UW, Seattle University, and Seattle Pacific University. Current psychology honor students from the UW include **Daniel Cho** (class of 2017; Dr. Webb), **Kyle Visitacion** (class of 2017; Dr. Webb), **Logan Kaplan** (class of 2016; Dr. Bernier), **Anna Diss** (class of 2017; Dr. Gerdts). Anna was awarded the 2016 Guthrie Prize from the University of Washington Department of Psychology for her work tying genetic events in autism to the broader autism phenotype in parents. **Reily Dever** (class of 2016) was awarded a Mary Gates Research Fellowship for her work in EEG gender differences in ASD. Four undergraduates from the Webb lab: **Reily Dever**, **Ricarda Bothe**, **Rachelle Lee** & **Ravneet Kaur**, presented their work on gender differences in children with autism at the UW Mary Gates Undergraduate Symposium on May 20, 2016.

Welcomes

Congratulations to our new faculty and students who joined our program in late 2016. **Acting Assistant Professor Karen Bearss PhD** joins us from Atlanta GA. Karen's clinical and research focus is on treatments for disruptive behaviors in ASD. Fellows **Anne Arnett PhD** and **Jessica Peterson PhD** have also joined the UW Autism Research program. You will be hearing more about them in 2017!

Departures

Dr. Bryan King MD has joined the UCSF Benioff Children's Hospital as Professor of Psychiatry and Vice Chair of Child and Adolescent Psychiatry for UCSF Health.

Congratulations to our students and staff who departed our autism research program in 2016 to further their education:

- **Trent Deschamps** (Bernier Lab), Child Clinical Psychology PhD program, UW
- **Judy Han** (Bernier lab), Medical School, UW
- **Olivia Welker** (Webb Lab), Medical School, Navy Medical Corp program
- **Casey Guilland** (Webb Lab) Medical School, Pacific Northwest University of Health and Science.
- **Sheila Ghods** (Webb Lab) MPH program, UCSF
- **Ann Clawson PhD** (Webb Lab), Neuropsychology Postdoctoral Program, Kennedy Krieger Institute.