BNAC
Buffalo Neuroimaging Analysis Center

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BNAC Newsletter

We are pleased to present the Volume 1, Issue 2 of the *BNAC Newsletter*, a periodic publication about the work of our Center. The *BNAC Newsletter* includes updates about our newest research, the academic and educational achievements of our staff, and information about our work as a core laboratory providing analysis services around the world.

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We hope you will find this publication informative and invite your comments and suggestions. Sincerely,

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Message from the Director

The COVID-19 pandemic, by most accounts, presented the threat of our lifetimes. As the spread of coronavirus accelerated, the medical system was overwhelmed and our communities were devastated, with over 25 million cases in the United States and over 420,000 deaths as of the end of January 2021. Work at many businesses across the country ground to a halt over the past year. Companies were forced to lay off or furlough their workers and in June the economy entered into a recession. To protect the health and safety of our research subjects, employees and students, BNAC staff have been working mostly remotely for ten months.

In spite of these obstacles, we are pleased to report that most BNAC clinical trials, core lab activities, and research studies have continued without interruption during the pandemic which is expected to last several months more.

2020 became an important year to focus on infrastructure, improving our processes, and for strategic planning. We embarked on new lines of research and continued to be very prolific in publishing 45 articles in high-impact peer-reviewed journals.

We are very proud of what we achieved in 2020 while keeping health and safety of our staff of paramount importance. I would like to thank all BNAC staff and collaborators, our academic and industry partners, and our Advisory Council and donors for their continued support. When successful vaccination is a reality in a few months, we will enjoy a phased return to our offices and working together. We also look forward to celebrating with you, a year late, our 20th anniversary.

Sincerely,

Robert Zivadinov

BNAC in the News

Here are several mentions of BNAC research in recent months:

- **Multiple Sclerosis News Today,** December 2, 2020: Aubagio slows grey matter, whole brain atrophy in CIS, study finds.
- **Docwire News Today,** November 24, 2020: Robert Zivadinov, MD, PhD, discusses MS fatigue.
- **Buffalo, NY** – Nov 17, 2020. Research studies progression of neurodegeneration in MS.
- **TCT Connect 2020** – Oct 15, 2020: REFLECT II trial assesses TriGuard 3 embolic protection device in TAVI patients.

Summary of 2020 BNAC activities

Despite the COVID-19 pandemic, 2020 was another productive year for the BNAC. Among the highlights were:

- 45 scientific articles were published by BNAC in the most prestigious world journals
- BNAC researchers held 10 platform presentations at several international scientific conferences and had 28 featured posters
- BNAC proposed new endpoint for cardiovascular intervention (TAVR) studies
- BNAC clinical core lab continued several phase III regulatory, phase IV, pivotal device clinical trials and translational research studies
- BNAC preclinical core lab completed several important studies using novel imaging biomarkers for detection of microglial activity
- BNAC faculty and staff won several research and travel awards

Publication Highlights

BNAC was involved in 45 publications in high-impact journals in 2020. Highlighted articles are listed below:

- Zivadinov R, Dwyer MG, Carl E, Poole EM, Cavalier S, Briassouli P, Bergsland N. *Slowing of brain atrophy with teriflunomide and delayed conversion to clinically definite MS.* Ther Adv Neurol Dis 2020;13:1756286420970754.
- Bergsland N, Benedict RHB, Dwyer MG, Fuchs T, Jakimovski D, Schweser F, Tavazzi E, Weinstock-Guttman B, Zivadinov R. *Thalamic nuclei volumes and their relationships to neuroperformance in multiple sclerosis: A cross-sectional structural MRI study.* J Magn Reson Imaging 2020:e27389.
- Fuchs TA, Benedict RHB, Wilding G, Wojcik C, Jakimovski D, Bergsland N, Ramasamy DP, Weinstock-Guttman B, Zivadinov R, Dwyer MG. *Trait conscientiousness predicts rate of brain atrophy in multiple sclerosis.* Mult Scler 2020;26(11):1433-6.
- Zivadinov R, Schweser F, Dwyer MG, Pol S. *Detection of monocyte/macrophage and microglia activation in the TMEV model of chronic demyelination using USPIO enhanced ultra-high field imaging.* J Neuroimaging 2020;10.1111/jon.12768.

- Pol S, Liang S, Schweser F, Dhanraj R, Schubart A, Preda M, Sveinsson M, Ramsamay DP, Dwyer MG, Weckbecker G, Zivadinov R. *Subcutaneous anti-CD20 antibody treatment delays gray matter atrophy in human myelin oligodendrocyte glycoprotein-induced EAE mice.* Exp Neurol 2020:113488.
- Ghione E, Bergsland N, Dwyer MG, Hagemeier J, Jakimovski D, Ramasamy DP, Hojnacki D, Lizarraga AA, Kolb C, Weinstock-Guttman B, Zivadinov R. *Disability improvement is associated with less brain atrophy development in multiple sclerosis.* AJNR Am J Neuroradiol 2020;41(9):1577-83.
- Tavazzi E, Bergsland N, Dwyer MG, Jakimovski D, Singhal T, Weinstock-Guttman B, Zivadinov R. *Imaging biomarkers of disease progression and conversion to secondary-progressive MS.* Expert Rev Neurother 2020:1-14.
- Jakimovski D, Bergsland N, Dwyer MG, Hagemeier J, Szigeti K, Guttuso T, Lichter D, Hojnacki D, Weinstock-Guttman B, Benedict RHB, Zivadinov R. *Multiple sclerosis neurodegeneration: volumetric magnetic resonance imaging comparison to Parkinson's disease, mild cognitive impairment, Alzheimer's disease, and elderly healthy controls.* Neurobiol Aging 2020:90-84-92.

For the entire list of 2020 publications please CLICK HERE

Conference Highlights

BNAC had 10 conference platform presentations and 28 posters featured at international scientific conferences in 2020 around the globe. Highlighted presentations are listed below:

- Moses J, Nazif T, Makkar R, Brown D, Dhoble A, Rovin J, Horwitz P, Forrest J, Zivadinov R, Dwyer MG, Lansky AJ. on behalf of the REFLECT II Trial Investigators. *A Randomized Evaluation oF the TriGUARD™ 3 cerebral embolic protection device to reduce the impact of cerebral embolic LEsions after TransCatheter Aortic Valve ImplanTation: The REFLECT II Trial.* TCT Connect 2020, Oct 15, 2020 Late Breaking News.
- Dwyer MG, Ramasamy DP, Jaffe K, Margolis K, Zivadinov R. *Inclusion of very small cerebral lesions in quantitative embolic protection study endpoints may obscure clinical relevance.* TCT Connect, Oct 15, 2020; J Am Coll Cardiol. 2020:76 (17 Supplement S) B207.
- Hildesheim FE, Ramasamy DP, Bergsland N, PhD, Jakimovski D, Dwyer MG, Hojnacki D, Lizarraga AA, Kolb C, Eckert S, Weinstock-Guttman B, MD, Zivadinov R. *Leptomeningeal, dura mater and meningeal vessel wall enhancements in multiple sclerosis.* 8th Joint ACTRIMS-ECTRIMS Meeting MS Virtual 2020, September 11-13, 2020: PS07.05.
- Zivadinov R, Bergsland N, Millman M, Jakimovski D, Ramasamy D, Weinstock-Guttman B, Zarif M, Freedman M, Hunter S, Cohan S, Edwards K, Steingo B, Zabad R, Baker M, Belkin M, Repovic P, Mazhari A, Chase A, Silversteen J, Smith D, Negroski D, Feinberg M, Newman S, Pardo G, Riolo J, Silva D, Dwyer MG 1on behalf of the DeepGRAI Study Group. *Feasibility of thalamic atrophy measurement in clinical routine using artificial intelligence: Results from multi-center, longitudinal study in RRMS patients.* 8th Joint ACTRIMS-ECTRIMS Meeting MS Virtual 2020, September 11-13, 2020: P0577.

- Pol S, Dhanraj R, Zivadinov R. *Bruton tyrosine kinase inhibitor suppresses disease progression in Thieler's Murine Enchephalomyelitis Virus mouse model of multiple sclerosis.* 8th Joint ACTRIMS-ECTRIMS Meeting MS Virtual 2020, September 11-13, 2020: P0302.
- Bergsland N, Dwyer MG, Jakimovski D, Weinstock-Guttman B, Zivadinov R. *Diffusion tensor imaging reveals greater microstructure damage in lesions that shrink into cerebrospinal fluid (Atrophied Lesion Volume).* 72nd Annual Meeting of the American Academy of Neurology, Toronto, Canada, April 29, 2020:S45:004.
- Dwyer MG, Brior D, Lyman C, Ferrari H, Bergsland, Fuchs T, Jakimovski D, Weinstock-Guttmann B, Benedict RH, Riolo J, Silva D, Zivadinov R. *Artificial intelligence based thalamic volumetry is fast, reliable, and generalizable to large, heterogeneous datasets using only clinical quality T2-FLAIR MRI.* 72nd Annual Meeting of the American Academy of Neurology, Toronto, Canada, April 29, 2020:S45:010.
- Fuchs T, Benedict RHB, Duc Tran H, Brior D, Bergsland N, Jakimovski D, Ramasamy DP, Zivadinov R, Dwyer MG. *Predicting longitudinal cognitive decline in MS using baseline clinical routine T2-FLAIR MRI.* 72nd Annual Meeting of the American Academy of Neurology, Toronto, Canada, April 29, 2020:P14:004.
- Salman FU, Zivadinov R, Bergsland N, Dwyer MG, Weinstock-Guttman B, Schweser F. *Trajectories of magnetic susceptibility in the pulvinar provide further evidence for accelerated decline of thalamic iron in multiple sclerosis.* 28th Annual Meeting of the International Society for Magnetic Resonance in Medicine, Sydney, NSW, Australia, April 18 to 23, 2020.
- Choudhary PG, Pol S, Preda M, Zivadinov R, Schweser F. *Detection of metabolic alterations in the thalamus of the TMEV mouse model of multiple sclerosis at 9.4 Tesla.* 28th Annual Meeting of the International Society for Magnetic Resonance in Medicine, Sydney, NSW, Australia, April 18 to 23, 2020.

Award Highlights

Announcing the 1st Recipient of Marc Stecker Award for Excellence in Multiple Sclerosis Research

During this year, the BNAC Advisory Council established the Marc Stecker Award for Excellence in Multiple Sclerosis Research to recognize the outstanding research achievements made in honor of the Advisory Council's founding member, Marc Stecker. Since 2011, Marc has used his passion for finding a cure for multiple sclerosis along with his impressive aptitudes and determination, to "push" the BNAC researchers in areas that his own research indicated could be promising, yet off the mainstream. As a result of Marc's tenacity, research was conducted during 2019 that produced 2 significant publications and provided new evidence for a significant role of the Epstein Barr virus in the etiology of multiple sclerosis.

The Marc Stecker Award for Excellence in Multiple Sclerosis Research is a non-renewable award that seeks to recognize the qualities that Marc has shown throughout his tenure on the Advisory Council, including persistence, courage, willingness to pursue ideas that may be off the mainstream, a vision that includes patient-centered outcomes/interests and skills for effectively communicating technical information to any audience.

The 2020 Marc Stecker Award for Excellence in Multiple Sclerosis Research was awarded to Dejan Jakimovski, MD, PhD, BNAC's Clinical Research Director. In addition to his publications that now exceed 70, Dr. Jakimovski's contributions far exceeded the award criteria and earned him the clear choice through unanimous nominations. The Council expressed it desire that this award inspire future research that emphasizes patient centric interests.

Additional Awards Highlights

Throughout 2020, BNAC members' accomplishments were acknowledged via a number of additional awards that are highlighted below:

- Dr. Schweser has been promoted to Technical Director of UB's Center for Biomedical Imaging
- Associate Editor for Frontiers in Neurology; *awarded to Niels Bergsland*
- MSVirtual2020 Educational Grant for attendance of the 8th Joint ACTRIMS-ECTRIMS Meeting, September 11-13, 2020; *awarded to Tom Fuchs*
- Dr. Schweser's team has filed a patent titled "Method for high accurate extraction of information from at least two-dimensional measurement data of an object, which are superimposed by a signal from external sources"
- Thomas Jochmann, PhD student, received a 1st Place Poster Award at the 2020 Annual Meeting of the ISMRM & SMRT for the work "How to train a Deep Convolutional Neural Network for Quantitative Susceptibility Mapping (QSM)"

For the entire list of 2020 awards please CLICK HERE

Research Update
BNAC Clinical Core Lab Trial Activities

In 2020, BNAC continued to serve as a Core MRI Lab for several phase III and IV multi-center clinical trials, as well as pivotal device approval studies from Mapi Pharma, Novartis, Roche-Genentech, Bristol Myers Squibb, Keystone Heart, Protembis and V-VAVE Medical.

On Oct 15, 2020, results of the Keystone Heart REFLECT II clinical trial were presented during a late breaking trial session at the Transcatheter Cardiovascular Therapeutics (TCT) Connect 2020 meeting by Dr. Moses (NewYork-Presbyterian/Columbia University Irving Medical Center, New York, USA). The REFLECT II trial evaluated the safety and effectiveness of the TriGuard 3 (TG3), a self-stabilizing cerebral embolic deflection filter, in patients undergoing transaortic valve replacement (TAVI). The REFLECT II analysis population included 283 patients: 41 roll-in, 121 randomized to TG3 and 121 controls. BNAC served as the centralized imaging Core Lab for this study. While the study did not demonstrate superiority of TriGuard 3 compared to pooled controls for the primary hierarchical efficacy endpoint (the composite of all-cause mortality or stroke at 30 days, National Institute of Health Stroke Scale worsening, absence of diffusion-weighted imaging -DWI- lesions post-procedure, and total volume of cerebral lesions by DWI), a post hoc DW-MRI analysis suggested that TG3 may reduce larger ischemic lesions.

Use of Artificial Intelligence (AI) to Ensure Better Precision and Accuracy of MRI Measures in Clinical Trials of Multiple Sclerosis

Deep learning is a state-of-the-art technique for developing computer vision methods capable of rivaling human-level ability in specific areas. In addition to the development of new research techniques, BNAC has also been working to integrate deep learning systems into clinical trial workflows to improve overall study quality. Unlike most research datasets, which are often curated by single investigators (or even trainees), BNAC uses a three-level quality control system where scans are reviewed by multiple evaluators and resulting gold-standard ROIs are painstakingly edited to ensure the highest possible accuracy. This in turn provides unparalleled training data for us to teach AI systems to identify and delineate brain regions and areas of pathology. By feeding this back into clinical trial activities, we can augment human operators to further improve precision of lesion delineation and accuracy of lesion detection.

BNAC Proposes New Endpoint for Cardiovascular Intervention (TAVR) Studies

BNAC had served as a central reading center for numerous transcatheter aortic valve replacement (TAVR) studies investigating the potential for new devices to protect the brain from embolic debris dislodged during the intervention. Using diffusion MRI, BNAC is able to detect new ischemic lesions in the majority of patients, and the total volume of these lesions is used as an endpoint in regulatory trials. However, as part of its academic mission, we have investigated this endpoint and found important potential for improvement. In particular, these TAVR-related lesions are often very small, disappear at later timepoints, and have unclear clinical impact. By directly studying the relationship between specific lesion volumes and clinical disability worsening, BNAC was able to demonstrate that a more sophisticated analysis technique called supra-threshold ischemic lesion (SCIL) volume can better identify clinically meaningful lesion volumes. Additionally, this measure can reveal substantial evidence of device efficacy that can otherwise be hidden by the presence of many small, temporary lesions. This work was recently presented at the annual TCT congress (Dwyer et al. Inclusion of very small cerebral lesions in quantitative embolic protection study endpoints may obscure clinical relevance, TCT 2020).

BNAC Pre-Clinical Core Lab Activities

The 2020 was an extremely busy year for BNAC Pre-Clinical Core Lab.
In collaboration with Novartis, BNAC concluded and published a study on the effect of subcutaneous anti-CD20 antibody treatment in human myelin oligodendrocyte glycoprotein-induced experimental autoimmune encephalomyelitis (huMOG-EAE) model of multiple sclerosis on gray matter (GM) pathology. Anti-CD20 antibody treatment delayed brain tissue neurodegeneration, and showed clinical benefit on disease severity in huMOG-EAE mice.

Blood-derived monocytes/macrophages can be labeled with ultrasmall superparamagnetic iron oxides (USPIO) at periphery and subsequently migrate into areas of inflammation in the brain. BNAC researchers investigated temporal pattern of migration of peripheral immune cells in Theiler's murine encephalomyelitis virus (TMEV) model of chronic demyelination by USPIO-enhanced imaging, as a novel approach for detection of macrophage/microglia activity. The main findings of the study are summarized as follows:

- USPIO lesions were detected in 2/3 of the TMEV-infected samples but none of the controls, potentially allowing more sophisticated power calculations using this imaging approach for testing efficacy of future therapeutic interventions

- Greater USPIO lesion number and volume were detected with worsening of the TMEV disease, indicating that increased lesion frequency reflects more chronic, rather than acute inflammation
- Greater USPIO number and volume were related to more severe TMEV disease, as evidenced by higher clinical disability and more advanced brain atrophy
- Histopathological analysis confirmed that USPIO lesions were related to increased Iba1 expressing cell density, a specific marker for microglia activity.

Taken together, these findings make serial brain USPIO imaging a promising biomarker for investigating the effect of disease modifying treatments on monocytes/macrophages and microglia activation and neurodegeneration in TMEV mice.

BNAC Translational Research Activities

Translational research applies knowledge from basic biology and clinical trials to techniques and tools which address critical medical needs to improve health outcomes. BNAC is engaged in several new areas of translational research.

BNAC Participates in NIH Funded Translational Project to Develop A Collaborative Neuroinformatics Platform

As part of UB's prestigious NIH Clinical and Translational Science Award (CTSA), the BNAC, Clinical and Translational Science Institute (CTSI), and Center for Biomedical Imaging (CBI) are leading a multi-disciplinary group to create a shared platform for automated image collection and quantitative analysis. This system will enable clinical researchers to quickly and easily access otherwise latent data answering clinical and fundamental neuroimaging questions. As part of this project, CBI identified and recruited a PhD student, Alexander Bartnik, who began work in February of this year under the supervision of Michael G. Dwyer, BNAC Neuroinformatics Director and CBI Director of Computational Analysis. Alex's initial work has focused on development of key imaging and analysis ontologies, which will facilitate automated connection of incoming scan types with appropriate methods of image analyses in a manner that standardizes the multitude of data and formats used across national CTSI peers. As a proof-of-concept, the BNAC DeepGRAI thalamic artificial intelligence (AI) volumetry tool has been incorporated into the platform facilitated fully automated thalamic volumetry via a simple PACS relay that can be easily integrated with clinical scanning protocols.

Thalamus Artificial Intelligence Project (DeepGRAI) was Successfully Applied in a First Multi-Center Study

At the 8th Joint ACTRIMS-ECTRIMS Meeting MS Virtual 2020, BNAC presented a study that investigated the feasibility of thalamic atrophy measurement using artificial intelligence (AI) in patients with multiple sclerosis. DeepGRAI (Deep Gray Rating via Artificial Intelligence) is a multi-center (31 USA sites), longitudinal, observational, real-word, registry study that will enroll 1,000 relapsing-remitting multiple sclerosis patients. The pre-planned interim results were based on 515 patients who were followed for an average of 2.7 years. DeepGRAI provided feasible thalamic volume measurement on clinical-quality T2-FLAIR images. The relationship between thalamic atrophy and physical disability was similar using DeepGRAI T2-FLAIR and standard high-resolution research 3D-T1 WI approaches. The study indicated potential use of DeepGRAI for real-world thalamic volume monitoring, as well as quantification on legacy datasets without research-quality MRI.
The study was performed in collaboration with Bristol Myers Squibb.
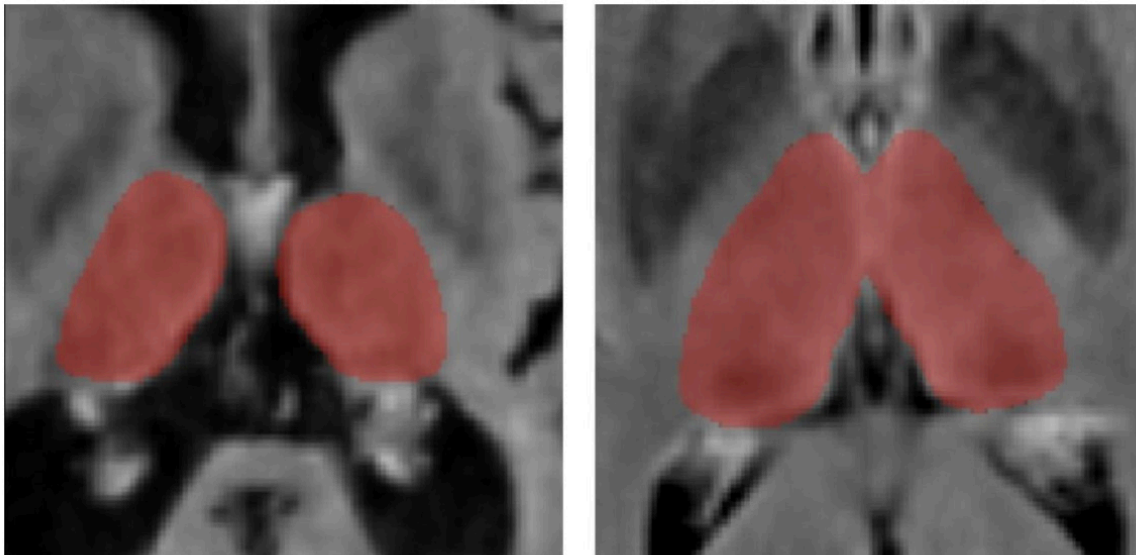
Results of DeepGRAI segmentation algorithm on cases with very high (left) and low (right) levels of atrophy. The classifier performs on clinical routine T2-FLAIR images well in both cases despite substantial differences in brain morphology and lesion load.

CASA-MS study Enrolls First Subjects

The Comprehensive Assessment of Severely Affected Multiple Sclerosis (CASA-MS) study focuses on severely affected patients with multiple sclerosis a population that is seldom studied, despite their poor quality of life and the impact of their severe disability on caregivers. Careful evaluation of the these patients is an unmet need that BNAC will address in collaboration with the Boston Home, a residential facility in Boston, Massachusetts for individuals living with advanced progressive neurological disorders, with a focus on MS.

The project's goal is to identify features and risk factors of severe MS, develop more sensitive outcome measures to better monitor disease progression, and to better understand how protected enriched environments contribute towards improving patient health.

The project was recently approved by the University at Buffalo's Institutional Review Board and the first study subjects are enrolled, despite the COVID-19 outbreak. In 2021, we plan to focus our research on determining the inflammatory and neurodegenerative imaging correlates of cognitive and physical disability in patients with severe MS. Another area of research we will focus on is to disentangle when physical disability gets in the way of accurate appraisal of mental status. We are working toward new assessments that require minimal manual or motor response, and vision, which is also very often compromised in severely disabled patients. We will standardize, pilot, and then systematically evaluate this unique population using novel measures of cognitive processing speed that only require auditory perception.

The study will enroll 60 patients in Boston Home, Boston, MA, and compare them to 60 age-, sex- and disease-duration matched MS patients, who are routinely followed at Jacobs MS Center, Buffalo, NY.

Meet the BNAC
BNAC Advisory Council

The BNAC Advisory Council was formed in the spring of 2011 to provide guidance in addressing current challenges in neurological research, to help clarify directions for new

research, and to provide education for those outside the neurological community about what BNAC's research means to the understanding of multiple sclerosis and other neurological diseases.

The BNAC Advisory Council seeks to provide patient centered input to promote research in areas of high relevance to people with MS. In doing so, the researchers at BNAC can incorporate current experiences and concerns of patients into their studies.

The BNAC Advisory Council undertook a new initiative to provide resources for patients that help explain research outcomes in a meaningful way. The Council is also working with the BNAC team to raise awareness and funding for the CASA-MS research study.

Larry Montani, BNAC's Advisory Council Chair

Larry Montani serves as BNAC Advisory Council Chair and leads the Strategic Planning committee. His service is inspired by a family history of MS, having three siblings with the disease, two of whom died from its complications. After an introductory visit in 2010, he joined the council hoping to help BNAC find answers and better outcomes for all the champions who fight multiple sclerosis. His work on the Council aims to leverage BNAC skill sets for sustainable revenue and enhance collaboration in the multiple sclerosis research community. A former chemical manufacturing executive, Mr. Montani also serves in advisory roles for local education, human services, and manufacturing entities. Originally from Boston MA, he has an engineering and business background. He and his wife Mary live in Lewiston, NY.

BNAC Staff

Michael G. Dwyer, BNAC's Neuroinformatics Unit Director

As a Buffalo native, Dr. Dwyer is a long-time member of the BNAC, originally joining the center in 2002 during his undergraduate studies. He later went on to complete a Masters in Computer Science and a PhD in Biomedical Imaging before becoming a UB faculty member in 2013 and receiving tenure as Associate Professor of Neurology earlier this year. His research at BNAC focuses on bringing computer science, digital image analysis, and machine learning techniques to bear on magnetic resonance imaging (MRI) in order to better characterize the onset, progression, and treatment of neurological disease (with a particular focus on multiple sclerosis). Key aspects of this include the development of new methods that have been used in clinical trials and have led to new understanding of brain responses to disease, the adaptation of currently research-only methods to translational real-world clinical settings, and the investigation of the relationship between brain structural and functional connectivity to cognition in disease. His work has been published in over 170 peer-reviewed articles with more than 7,000 combined citations. Dr. Dwyer also dedicates substantial time to teaching and mentoring, providing undergraduate students from diverse backgrounds with opportunities to participate in neuroscience research, and guiding graduate students to become independent researchers in their own right.

Zachary Weinstock, BNAC's PhD student

Zachary Weinstock, a student in the combined MD/PhD program at the University at Buffalo, recently joined the BNAC to undertake his PhD thesis work. He will work jointly with the BNAC and Dr. Ralph Benedict's Neurocognitive Lab to investigate the ways that imaging can inform us about the contributors to and risk factors for cognitive relapse and cognitive decline in MS. Zach has already hit the ground running in the past few months, undertaking a project to look into the relationship between leptomeningeal enhancement as seen on high-resolution 3D FLAIR imaging and key cognitive domains in MS. As a future clinician-scientist, he is also extremely interested in translational approaches, and has begun work on understanding clinically-meaningful reliable change indices to help monitor individual patients for cognitive issues.

20th Anniversary to be Celebrated in 2021

Due to COVID-19, BNAC's 20th anniversary celebration will be held in the Fall of 2021 when safe travel is again possible. Details about the anniversary events will be posted on http://www.bnac.net

We are grateful to all who have contributed to BNAC research funds. These gifts allow us to explore promising new areas of research. To learn more and to donate, visit
https://www.bnac.net/donate

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