Jemsek
SPECIALTY CLINIC

January 24, 2018

RE: Frederik Bramm
DOB: October 11th, 1992

To Whom It May Concern:

We write this letter on behalf of our above-named patient, Mr. Frederik Bramm, a now-25-year-old male, to further clarify his medical conditions and anticipated prognosis.

Mr. Bramm initially presented to our Washington, DC-based specialty infectious disease on March 9th, 2015, at which time his medical history was extensively reviewed and a comprehensive physical examination was performed. He has a history of tick exposure, and dates the onset of his health issues to September of 2009 with the development of the characteristic erythema migrans ("bull's eye") rash, a dermatologic manifestation classically clinically diagnostic of Borreliosis infection. Concurrent with the appearance of this rash was the development of febrile flu-like sequelae, and since this time, he has suffered from persistent multi-system involvement severe enough to affect his overall functionality and quality of life.

Prior to his presentation at our office, he had been evaluated by multiple healthcare providers in his native country of Denmark, although without definitive diagnosis or any real sustained benefit from treatment. As a result, he was forced to seek to seek care abroad in Spain, Germany, and the United States.

Mr. Bramm's diagnosis of Borreliosis Complex with neuroborreliosis was confirmed at our office based upon his telling medical history, clinical presentation (including symptom picture with the characteristic triad of arthritic, encephalopathic, and neuropathic involvement), supportive laboratory testing (indicative of both Borreliosis as well as multiple other common co-infections), abnormal physical examination findings, and his response and reactivity to previous antibiotic therapies.

As background, Lyme Borreliosis is characterized by a group of chronic infections, most notably the spirochetal bacterium of the genus *Borrelia*. (As a parallel, this organism is closely related to *Treponema pallidum*, the causative agent of syphilis and neurosyphilis, although Borrelia species are in many respects far more adaptable and destructive than their more famous cousin.)

There are over one hundred strains of Borrelia found in the United States alone (Rudenko N 2011; Krause PJ 2013), rendering available laboratory testing, which relies primarily on the detection of only a few wild type strains, insensitive and unreliable (i.e. a negative test does not necessarily rule out infection). In addition, Borrelia species are notorious for their immune evasive mechanisms, and can therefore avoid detection not only by the body's own defenses but by indirect laboratory testing as well. Please note, however, that in Mr. Bramm's case, he demonstrated extensive positive laboratory findings, to include positive *Borrelia burgdorferi* antigen, positive Borrelia Osp, positive Borrelia lymphocyte function assay (LFA), positive *Chlamydia pneumoniae* ELISpot, and positive Ehrlichia ELISpot.

Resistance and recurrence are common features of this illness, and are influenced by several factors. Borrelia bacteria are capable of existing in multiple life forms, and can be found both intra- and extracellularly as well as secluded within biofilm. They have multiple mechanisms which contribute to overall immune evasion and immune suppression, this allowing the bacteria to persist within the body (Singh 2004; Livengood 2006; Liang 2002).

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It is well documented within the available literature that Borreliosis Complex entails chronic manifestations and that these may be severe and disabling. In one study of the effect of chronic Lyme, quality of life analyses showed that those suffering from the effects of Borreliosis have fatigue and physical functioning comparable to those with congestive heart failure and pain on par with osteoarthritis and post-surgical patients. Mental health status was comparable to those with subthreshold lifetime depression (Klempner 2001).

Mr. Bramm has been extremely ill over the past several years. As stated above, his health issues have affected multiple body systems, with considerable musculoskeletal, immunologic, constitutional, neurologic (including neurocognitive), and dermatologic manifestations. He continues to suffer from persistent pain, fatigue, dyssomnia, and cognitive dysfunction, among other issues. He has demonstrated multiple clinical abnormalities on numerous physical examinations, and his symptomatology is consistent with his objective findings and scope of illness.

Treatment remains ongoing and is rigorous, consisting of pulsed combination (multiple) antimicrobial medications to target overall infection load as well as facilitate immunologic reorganization and stabilization.

Such therapy will likely need to remain fairly aggressive for at least the next twelve (12) to eighteen (18) months in order to ensure more adequate eradication of this highly insidious infection complex. After that point, he will probably require continued antibiotic maintenance therapy (consisting of three to four days of antibiotic coverage each month) to ensure adequate immune control over residual or recrudescent stealth pathogen illness; such treatment may continue over the next two years. While the full extent of damage from this illness is unclear, he may require supportive or palliative medications for the duration of his lifetime.

Thank you in advance for your understanding and consideration. Should you have any questions or require any additional information, please do not hesitate to contact our office.

Sincerely,

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Board Certified Internal Medicine, Infectious Disease

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