

My prog-MS ezine

For people with progressive MS and other interested people

Issue 55, July/ August 2024

Hello and welcome to the 55th edition of my ezine about progressive Multiple Sclerosis and MS progression in general. My name is Ian Cook. I'm a secondary progressive MSer from Birmingham, UK. I'm 65.

In Issue 55, there are eight pages of prog-MS news stories about new trials and research and two features. One on page 5 looks at a personal one-man trial where I went online and bought 3 month's supply of the anti-retroviral drug PrEP in the hope the drug might help treat The Epstein Barr virus which many believe is the driver of MS and its progression. So did PrEP work for me? Go to page 5 to find out.

There's another feature on page 10 looking at an approach to treating MS often overlooked but surprisingly simple. To treat MS you simply focus on the auto-immunity linked to it and develop a body tolerance to what is causing that auto-immunity. If this works the body stops attacking itself, and in theory MS goes away and we are all cured. But will this simple approach work? Two bio-pharmas think so and are carrying out trials, one backed by $35 million from a major drugs company . More on page 10.

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News

Second trial looks at HIV drug Tenofovir as MS treatment

A new study into a HIV drug as an MS treatment is taking place in Bergen, Norway. The researchers say that, if successful, the trial could mark a "paradigm shift" in in our understanding of MS and the management of the disease.

The "proof of concept" study, is using the drug tenofovir alafenamide fumarate (TAF) to tackle Epstein-Barr virus infection in MS, and is recruiting 24 patients, 16 of whom will receive the dug and eight who will receive a placebo or dummy drug. It is currently recruiting participants.

The researchers, from the Bergen Multiple Sclerosis Research group, say: "Novel insights from the group indicate that infection with the Epstein-Barr Virus (EBV) is the leading cause of MS. As EBV infection is persistent for life, the virus could act as a trigger or driver of MS-disease activity. If results from a clinical trial could confirm that targeting EBV reduces MS-disease activity, it would result in a paradigmatic change in our understanding of MS

"In collaboration with researchers at Harvard University, Boston, USA, we have identified a highly interesting candidate drug targeting EBV, not yet tested in MS patients. This trial could lead to a new paradigm in MS therapy, as it will test a drug that may target the underlying cause of the disease. "

The trial will be a randomized double-blinded, placebo-controlled trial comparing the efficacy and safety of two doses of Tenofovir alafenamide fumarate (TAF) on viral infection as add on therapy in stable relapsing remitting (RR) MS patients receiving natalizumab (Tysabri). The primary endpoint is safety and tolerability of the drug and change in EBV shedding in saliva after 6 months of treatment. A pilot testing of methods to evaluate EBV shedding in saliva has been conducted, with positive results.

The Norway trial is the second to be looking at Tenofovir as a potential candidate drug for tackling MS. The other trial taking place in the US at Harvard Medical School is looking at another preparation of tenofovir (Tenofovir Disoproxil Fumarate) commonly known as TDF and one of the two drugs that make up PrEP, a drug used to prevent HIV positive patients passing on the virus to those who are HIV negative. The US trial is expected to post results in December 2024. For those interested Dimethyl fumarate(Tecfidera), is a disease modifying therapy (DMT) used for treating 'active' relapsing MS which also uses fumarate so the effect of TAF/TDF could owe something to its fumarate content too. ***For details of sources for all news stories go to page 14***

More than 500 in Phase III trial of new SPMS drug Frexalimab

A revolutionary new immune system modulating drug has been found to suppress MS disease activity to an "uncommonly high degree," in early trials and is now being tested in a major phase III trial taking place in non-active secondary progressive MS. The trial which has one UK site is due to report results in four years' time.

The drug called Frexalimab works on CD40L, a protein that's important for the function of a signalling pathway called the CD40/CD40L costimulatory pathway. This pathway promotes activation of the innate and adaptive immune systems.

Activation of the CD40/CD40L pathway is believed to be involved in the inflammation that characterizes MS, as well as certain other autoimmune diseases. In earlier trials researchers found a near absence of new brain lesions at 48 weeks in patients on the highest dose of frexalimab.

Gavin Giovannoni, MD, PhD, chair of neurology at Barts and the London School of Medicine and Dentistry at Queen Mary University of London, said he was "thrilled with the results achieved with frexalimab in just 3 months, which shows that CD40L inhibition rapidly controls MS disease activity without lymphocyte (a type of white blood cell) depletion,"

Frexalimab is given intravenously every four weeks after a "loading dose", and then subcutaneously (under skin) every two weeks. Beta-interferon drugs are given subcutaneously. According to the Clinical Trials website the current trial will go on for 51 months – more than four years.

A phase III trials is currently recruiting patients with secondary progressive and relapsing remitting MS in separate trials. The trial in secondary progressive MS is called FREVIVA. Expected to include 858 participants with non-relapsing secondary progressive MS, the study will assess disease progression. The trial includes those aged 18-60 years who have an EDSS score of 3.0-6.5, no clinical relapses for at least 24 months, and documented disability progression in the previous 12 months as analysed by an Eligibility Adjudication Committee.

The study will measure disease progression as shown by timed 25 foot walk test and nine hole peg tests as well as clinical tests including MRI scans and levels of neuro filament light – a marker of neurodegeneration. Although most test locations are in the US and Canada, several test centres are in European countries including one UK site at Kent and Canterbury Hospital in Canterbury.

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News

“Real-world studies” give positive results for Rituximab in prog-MS

Several clinical trials have confirmed the safety and effectiveness of rituximab as an off-label drug in prog-MS. However, “real-world” evidence is still needed to help guide neurologists in their decisions to use the drug.

That’s the finding of a group of researchers led by Dr. Kevin H. Li, who conducted a review of observational real-world studies published in the Journal of Managed Care and Specialty Pharmacy. MS had the most (81%) reporting positive outcomes for rituximab compared to other diseases studied.

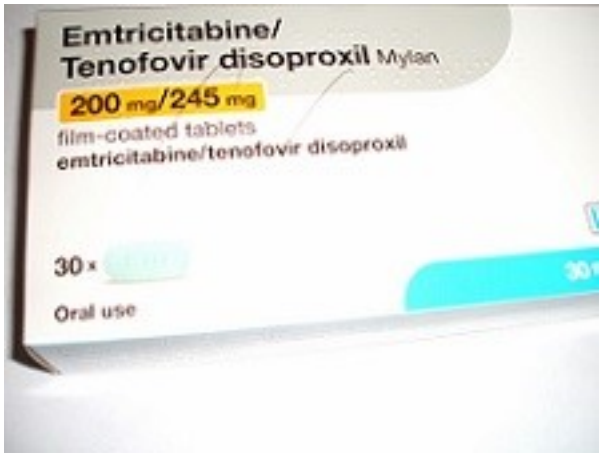
Rituximab is an anti-CD20 monoclonal antibody approved in the US to treat several types of cancer and autoimmune conditions, including non-Hodgkin lymphoma, leukaemia, and rheumatoid arthritis. It is used off-label as a treatment for MS, but mainly in countries outside the UK. It is given by infusion. It is available under the brand name Rituxan (Genentech and Biogen) and three biosimilars: Truxima (rituximab-abbs), Ruxience (rituximab-pvvr), and Riabni (rituximab-arrx).

Although several clinical trials have confirmed the safety and efficacy of rituximab in treating cancer and autoimmune disease, and even as off-label use in MS, real-world evidence is still necessary to help guide neurologists in their treatment and coverage decision-making.

To assess the state of real-world research evaluating the use of rituximab in oncology, rheumatoid arthritis, and MS, a group of researchers led by Kevin H. Li, B.S., B.A., conducted a review of ‘real-world studies’ published between January 2010, and June 2022.

The results were published in the Journal of Managed Care and Specialty Pharmacy. Eligible studies included adults treated with infliximab for non-Hodkin lymphoma, diffuse large B-cell lymphoma, chronic lymphocytic leukaemia, rheumatoid arthritis, or MS. A total of 260 studies were included in the review, 37 of which were for MS.

In all the MS studies, rituximab was used as a “monotherapy” for both primary progressive and secondary progressive MS. Of the 37 MS studies evaluated, 18 compared rituximab with other MS treatments, such as alemtuzumab, natalizumab, ocrelizumab, glatiramer acetate, interferon-β, fingolimod, and dimethyl fumarate. Of all disease states studied, MS had the most (81%) reporting positive outcomes for rituximab. The researchers conclude that this real-world evidence can be used to help managed healthcare professionals make decisions regarding rituximab coverage and treatment, given the availability of several biosimilars that can help reduce cost. **For further details see page 14.**



Hope is where the HAART is

For three months this Spring I undertook a one-man trial taking a highly active anti-retroviral (HART) drug called PrEP (see pic left) in the hope it might help treat my prog MS..

I bought a three-month supply online of PreP (emtricitabine + tenofovir disoproxil) from a well-known high street pharmacist after filling in an online questionnaire, getting an online prescription and stumping up £160 for a three-month supply. I know I am not the only MSer who has taken PrEP because MS specialist Prof. Gavin Giovannoni of Barts Hospital in London said the following in a post published on the social media platform Medium: "I know that many of you are taking HAART based on hope." He then added a cautionary note: "Let me remind you that hope is not a strategy to treat MS."

Oh dear, I am suitably chastised. Anyway, putting Prof. Giovannoni's cautionary note to one side, I should address his other point about growing numbers of people like me taking anti-retroviral drugs and ask: why is this happening?

A growing number of MSers including me are now waking up to the fact that a virus, almost certainly the Epstein Barr virus (EBV), is part of the reason we get MS in the first place. Existing anti-virals like acyclovir have been unsuccessfully trialled in MS and are ineffective against EBV, hence they don't work in MS. By contrast, many HAART/ HIV drugs are effective in combatting EBV as well as HIV.

The drug I am taking, PrEP, for example contains an anti-viral drug tenofovir disproxil fumarate known to be partially effective against EBV. On a practical note, PrEP is relatively easily obtained online from high street pharmacists or from your GP. **Continued on page 6**

Continued from page 5 Those who have read the academic papers will know there are several cases of HIV positive MSers who have taken anti-retroviral HIV drugs and whose HIV and MS symptoms have both improved. In some MS patients their symptom improvements have been so great that all evidence of their MS has disappeared. These cases go back more than a decade to at least 2012. In 2015, a meta-analysis (bigger study) published in the Journal of Neurology Neurosurgery and Psychiatry found people who were HIV positive and receiving HAART drugs were two thirds less likely to develop MS than those who were not taking these drugs.

Finally, late last year a study published in the Annals of Neurology gave some possible explanations of the science behind what has, for years, been a medical mystery surrounding MS and HIV. A news release accompanying the study was headlined: "HIV drugs might help prevent multiple sclerosis, large new study suggests". The researchers said that having HIV and taking HAART drugs might be effective against MS. The explanation is potentially two-fold. First, HIV destroys T cells (like many MS disease modifying drugs) Second the antiviral properties of HIV drugs might play a part in these MS patients' improvements by limiting Epstein-Barr virus activity as well.

To test this second idea a Phase 2 trial of 50 MS patients is currently taking place in the US led by a Harvard neuro-immunologist to see if PrEP can reduce EBV levels in MSers. I hope the trial, which reports in December, is successful in further proving the link between EBV and MS as well as showing that anti-retrovirals can work as MS treatments.

There is another trial taking place in Bergen, Norway testing another anti-retroviral drug called tenofovir alafenamide (TAF). This trial follows yet another case study of a patient with HIV who got MS was treated with the HAART drug, tenofovir alafenamide (TAF), and whose MS went into complete remission. The case study published in 2020 suggests that tenofovir alafenamide (TAF) is far more effective at stopping EBV than tenofovir disoproxil fumarate (TDF) the tenofovir preparation contained in PrEP and the one I was taking.

The reason for being confident about saying this was that after taking tenofovir alafenamide (TAF) the Norwegian MS/ HIV patient was later switched to tenofovir disoproxil fumarate (TDF) and had renewed disease activity after switching to TDF. Given that my TDF trial hasn't stopped my MS in its tracks I think I will have to consider looking at how to get hold of TAF online. It will be difficult because TAF is an anti-hepatitis drug and I don't have hepatitis, but then again I got hold of an anti-HIV drug and I don't have HIV. Hope, as they say, springs eternal. **For further details of sources for feature see page 14.**

US Trial suggests stem cells can help prog-MS walking and bladder control

A phase 2 clinical trial investigating the use of 'autologous stem cell-derived neural progenitors' in patients with progressive MS found some improvements in bladder function and the six-minute walk test plus less brain atrophy.

Researchers led by Saud A. Sadiq, M.D., director and chief research scientist of the Tisch Multiple Sclerosis Research Center of New York, completed a phase 2 clinical trial investigating the use of autologous stem cell-derived neural progenitors as a treatment option in progressive MS. The study results were published last month in Stem Cell Research & Therapy. An autologous transplant uses a person's own stem cells. Progenitor means the cells can become wide variety of different cells when infused into patients.

A total of 54 patients with secondary-progressive or primary-progressive MS and an Expanded Disability Status Scale (EDSS) score between 3.0 and 6.5 were randomized to receive autologous bone marrow mesenchymal stem cell (MSC)-derived neural progenitors (MSC-NP) or a placebo (saline by intrathecal injection).

Half of the participants received MSC-NP injections every two months for one year, and the other half received a placebo - saline injections. The two groups were switched during the second year, so each participant received the study treatment for one year.

The primary study outcome was improvement in the EDSS Plus score. This is a composite score of the EDSS scale, timed 25-foot walk, and nine-hole peg test, which measures upper limb function. Although the study did not meet the primary endpoint, researchers noted that some secondary outcomes were achieved. These included improvements in bladder function and the six-minute walk test. The participants in the MSC-NP groups also had reduced brain grey matter atrophy and changes in biomarkers that indicated a potential for reduced inflammation and tissue repair. No serious 'adverse effects' were reported.

The researchers concluded, "Although the primary outcome of EDSS-based improvement was not met, the significant improvement in secondary walking outcomes addresses an unmet need in MS patients with progressive disability [Intrathecal] MSC-NP injection was associated with improved bladder function which is a relevant quality of life issue in people with MS. In addition, we found indirect evidence of a neuroprotective effect as seen by brain MRI cortical grey matter volume changes."

Sadiq and his colleagues recommend further studies with endpoints measuring walking abilities and optimal dosing of MSC-NPs.

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News

Dormant EBV reactivates with MS disease activity, study finds

Dormant Epstein-Barr virus (EBV) is activated during periods of disease activity in MS and triggers inflammatory activity in a wide range of immune cells, a new study suggests.

Blocking EBV activation can reduce the inflammatory activity of immune cells, supporting the idea that targeting the dormant virus may help treat MS, the study researchers say. Their study, "Multiple sclerosis patient-derived spontaneous B cells have distinct EBV and host gene expression profiles in active disease," was published in Nature Microbiology and carried out by researchers in the US.

EBV is best known as the cause of glandular fever (infectious mononucleosis), though it also commonly causes nonspecific childhood illnesses. The vast majority of humans are infected with EBV by the time they reach adulthood. After the initial infection, the EBV virus stays in B-cells (a type of immune cell) in an inactive or latent state, but in some situations it can switch to an active, or lytic, state, prompting a new round of infection, possibly an MS relapse. Infection with EBV has been identified as one of the strongest risk factors for developing MS. However, the biological details of how EBV and MS are connected remain poorly understood.

The scientists behind the new research analysed B-cell lines derived from EBV-infected people, aiming to better understand how the virus affects immune activity. They analysed samples from MS patients with active disease on MRI scans (that is, with at least one lesion with active inflammation), samples from MS patients with stable disease (without active lesions), and samples from people who did not have MS.

The researchers found that in B-cells from people with active MS, EBV showed more active, "lytic" activity compared with cells from healthy people or from stable MS patients. The increase in lytic viral activity in B-cells during active MS was accompanied by increases in inflammatory markers in these cells. B-cells are known to play a major role in driving MS-related inflammation. Several approved MS treatments work by specifically targeting these immune cells. The researchers' findings imply that reducing EBV lytic activity might reduce the B-cell-mediated inflammation that drives MS. As an initial test of this idea, the researchers used their cell models to test three antiviral compounds that can block EBV lytic activity through different biological mechanisms. Results showed the anti-viral tenofovir alenfenamide (TAF) — reduced markers of B-cell inflammation. Further experiments demonstrated that, when EBV-infected B-cells were grown alongside T-cells — another type of immune cell with a central role in driving MS — treatment with TAF reduced the inflammatory activity of the T-cells as well. **For details of all news stories go to page 14**

Octopus prog-MS drugs trial recruiting hundreds at UK sites

The Octopus trial which is testing several new treatments for progressive MS has recruited hundreds of participants according to a recent update.

Octopus is a UK trial with one 'arm' or treatment group taking an existing diabetes medication called Metformin and another arm taking R/S Alpha Lipoic Acid, - an anti-oxidant. There is also a 'control arm', in which people take a placebo or dummy drug. The trial is called "Octopus" because like the sea creature it has many 'arms', or many drugs being tested out,

Metformin and R/S Alpha Lipoic Acid are the first two drugs to be chosen for the trial on the grounds that they've shown promise in the laboratory that they may have the ability to protect nerves from damage and/or repair myelin. So far 13 hospital sites are open and actively contacting potential participants, 413 potential participants have been through telephone screening by their chosen site, 287 have attended their chosen hospital site for further screening. In addition, 235 participants have entered the Octopus trial and started trial treatment. Another 140 participants will start treatment on the trial by December 2024 - to reach the goal of 375 participants in this first trial stage.

Octopus will recruit participants until at least 2028 and has 2 stages. Stage 1 (the present stage) needs 375 participants (aim is to finish recruiting participants in December 2024). Stage 2 will start in 2025 and will recruit about 825 more participants until around 2028. Organisers say they will add more 'treatment arms' in 2026.

Organisers also say that because of the unprecedented number of registrations of interest, if you're aged 69 or 70 now you may not be contacted before you're 71, and unfortunately that would mean that you're not able to join Octopus. The trial hospital site teams will aim to prioritise those close to 70, but if this is not possible, they apologise.

Further information on Octopus and other trials there will be updated in August 2024. For more information or updates on Octopus, please visit: www.ms-octopus.info If you would like to know about other MS Clinical trials available, please refer to: https://www.mssociety.org.uk/research/take-part-in-ms-research/be-in-a-study.

For further information go to page 14



MS and auto-immunity - is a sea change imminent?

One approach to treating MS is often overlooked but is surprisingly simple, some might say simplistic.

To treat MS, you simply focus on the auto-immunity linked to it and develop a body tolerance to what is causing that auto-immunity. If this works the body stops attacking itself, and in theory MS goes away and we are all cured, hoorah.

Well, that's the theory and it's been around for years. In practical terms researchers develop something called an "inverse vaccine". Unlike traditional vaccines that give the immune system a glimpse of the problematic substance to fight off, inverse vaccines introduce the problematic substance through a process that encourages the immune system to tolerate it or even simply ignore it. In MS, for example, this problematic substance would be myelin, or something in myelin and your body learns to "tolerate" it or just ignore it.

Well, that's the theory and it's been tried out in things like food allergies with some success. Although the idea of applying the theory to MS has been around for years it gained some traction recently when not one but two separate bio-pharmas announced they are working on inverse vaccines for MS.

One inverse vaccine is being developed by a Norwegian bio-pharma Nykode Therapeutics. Its inverse vaccine called TV004 aims to boost immune system tolerance to a specific protein target in myelin called myelin oligodendrocyte glycoprotein (MOG), and research has shown TV004, through generating tolerance to MOG, was able to prevent the development of MS in a mouse model of the disease. It was found TV004 infusions before "mouse MS" induced protected mice from mouse MS, with very mild or no symptoms over 28 days. The other approach comes from Swiss biopharma Anokion, and has the backing of pharmaceutical giant Pfizer who have stumped up $35m.

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Continued from p10 The researchers point out a basic challenge in inverse vaccines namely that although several inverse vaccine experiments in animals like the one above have succeeded they fail in human trials. The reason is that it's often hard to determine exactly what self-antigen the human body is reacting to, and whether it's reacting to more than one self-antigen. This has been the problem in MS where myelin or MOG (myelin oligodendrocyte glycoproyein) is normally considered to be the obvious auto-antigen as Nykode clearly believe. However in addition to MOG there are at least four other proteins in myelin which could cause the cascade of auto-immunity that characterises MS.

In addition to the question about what exact protein or proteins cause autoimmunity in MS, there is another question: which body part do you use as a base for targeting these auto-immune causing proteins? Anokion is using a new approach pioneered by Jeffrey Hubbell, the company's co-founder, and his colleagues.

The Anokion inverse vaccine ANK-700, directs the self-antigen to the liver — an often-underappreciated immune system player. The liver can signal the immune system to leave certain cells alone and is ideally positioned to detect pathogens entering the body via the gut. The liver is designed to detect, capture and clear bacteria and viruses as it contains the largest collection of phagocytes in the body. Phagocytes are cells that protect the body by "hoovering up" harmful foreign particles, bacteria, and dead cells.

The Anokion vaccines use engineered proteins and a sugar to encourage the liver to label the self-antigen as a friend, not a foe. This can suspend the immune attack, halting and potentially reversing disease progression, a process outlined in a recent study. In terms of the self-antigen that ANK-700 is working on Anokion says the following: " it encompasses a previously identified myelin antigen that is implicated in driving Multiple Sclerosis . . . In the past, we showed that we could use our approach to prevent autoimmunity,". It is likely inverse vaccines would be given as an introductory dose followed by regular boosters to keep the immune system from "veering off track". Human trials in MS are underway, with help of that $35 million from Pfizer. ANK-700, is currently in phase 1 trials at 15 locations in the US. Early results have shown a trend toward immune tolerance and Anokion anticipates having full results in the second half of this year.

So, while the idea of a reverse-vaccine is very much a wild-card in MS research, early results available later this year may give some indication of whether this old approach could lead to the cure – MS research's holy grail which, like the Crusaders of old, we are all ardently seeking. **For details of all features go to page 14.** **Photo by Olu Famule on Unsplash**

News

Nearly $650k awarded to advance potential remyelination drug IFB-048

The US National Multiple Sclerosis Society has awarded bio-pharma Inflectis BioScience a grant valued at $649,601 to advance the preclinical development of IFB-048, an experimental treatment to promote myelin repair in MS.

There are more than 20 approved MS treatments, but all of them reduce inflammation. No therapy has ever been proven to actually promote the repair of damaged myelin, a process called remyelination. Finding new treatments that can promote remyelination is a major goal of modern MS research and the aim of this new project.

The project, which will be led by Brian Popko, PhD, a professor at Northwestern University, USA will test whether IFB-048 can help promote remyelination in MS mouse models. Researchers will evaluate if IFB-048 can protect nerve cells and/or oligodendrocytes, which are the brain cells mainly responsible for producing myelin. The experimental therapy's distribution throughout the nervous system and metabolic properties also will be evaluated.

"We look forward to the results of these experiments, and hope that IFB-048 continues to show promise for promoting myelin repair and stopping MS progression in its tracks," said Walter Kostich, PhD, associate vice president of translational research at the US National MS Society.

IFB-048 is designed to activate a molecular signaling pathway called the integrated stress response, or ISR. Popko said guanabenz, an approved treatment to lower blood pressure that's able to activate the ISR, has shown promising results in MS studies. IFB-048 was designed as a derivative of guanabenz, the aim being to maximize the drug's ability to activate the ISR while minimizing its impact on blood pressure, which may cause unwanted side effects.

"In animal models of MS, we confirmed that another guanabenz-related compound, IFB-088, was able to protect oligodendrocytes and myelin against the inflammatory environment," Popko said. **For details of all stories go to page 14**

New vitamin B product being trialled in prog-MS

A clinical trial investigating whether a "neutroceutical" vitamin B3 product could help in progressive MS is taking place in Norway. Nutraceuticals are products derived from food sources that are claimed to provide extra health benefits, in addition to basic nutrition.

The product being trialled is a preparation of Nicotinamide Riboside (NR) a member of the vitamin B3 family which particularly helps reduce tiredness and fatigue. The body converts NR into Nicotinamide Adenine Dinucleotide (NAD+) which is a molecule found in every living cell and is responsible for energy metabolism through mitochondria.

Mitochondria are special compartments (organelles) in cells that are best known for their role as powerhouses, as they break down food molecules and turn out ATP, a molecular fuel for the rest of the cell. Evidence suggests that mitochondrial dysfunction occurs in the brain of patients with MS and may play a particularly important role in the neurodegenerative processes underlying the disease course in progressive MS. This mitochondrial dysfunction is believed to compromise neuronal metabolism and survival, including ATP deficiency and decreased rate of mitochondrial oxidation, leading to depletion of neuronal NAD, one of the most essential molecules for bioenergetics conversion and signalling in human cells.

The objective of the study is to investigate whether taking nicotinamide riboside (NR) tablets reduces disability progression in progressive MS. The study is randomized and double-blinded where 300 patients with progressive MS receive either oral 500 mg nicotinamide riboside or a placebo for 30 months. The patients will attend nine clinical visits that include clinical scorings, imaging, blood sampling, questionnaires, and patient reported outcomes.

The study will look in particular at disability progression, either by worsening of Expanded Disability Status Scale (EDSS), Nine-Hole-Peg-Test (9-HPT) or Timed 25 Foot Walking (T25FW) after two years of therapy.

MSers with long memories may recall that another B vitamin - vitamin B6 (biotin) - was extensively studied for exactly the same hoped-for benefits some years ago by French researchers. The experimental vitamin B6 drug called MD1003 was clinically trialled in several studies including a phase III study compared MD1003 or placebo in 642 people with primary or secondary progressive MS. Compared to placebo, MD1003 had no significant effect on EDSS score or time taken to walk 25 feet; the researchers concluded there was no improvement in disability.

In 2017 Medday, the company developing MD1003, told the European Medicines Agency that it wished to withdraw its licence application for drug in the treatment of progressive MS. **For details of all news stories see page 14**

References further details, etc

Page 2 Norwegian research into HIV drug for EBV in MS

https://www.uib.no/en/rg/ms/126943/clinical-trials#8-the-taf-ms-study-tenofovir-alafenamide-fumarate-taf-and-epstein-barr-virus-infection-in-multiple-sclerosis-a-proof-of-concept-study

https://clinicaltrials.gov/study/NCT05957913?lat=42.3744368&lng=-71.1182488&locStr=Harvard%20University,%20Cambridge,%20MA&distance=50&cond=multiple%20sclerosis&intr=Tenofovir%20disoproxil%20fumarate&rank=1

Page 3 Frexalimab study in progressive MS

https://www.neurologylive.com/view/cd40l-inhibitor-frexalimab-tested-phase-3-trials-relapsing-ms-non-relapsing-secondary-progressive-ms

https://www.medscape.com/viewarticle/multiple-sclerosis-med-nearly-eliminates-disease-activity-2024a1000aio?ecd=WNL_conf_neuro_CMSC-SPON_240623_MSCPEDIT_etid6608557&uac=223883BY&impID=6608557

https://clinicaltrials.gov/study/NCT06141486?locStr=USA&country=United%20States&cond=multiple%20sclerosis&term=secondary%20progressive&intr=frexalimab&rank=1

page4 Rituximab for prog-MS

https://www.managedhealthcareexecutive.com/view/most-real-world-studies-report-positive-outcomes-of-rituximab-use-in-multiple-sclerosis

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Norwegian research into Tenofovir Alafenamide drug for EBV in MS

https://www.uib.no/en/rg/ms/126943/clinical-trials#8-the-taf-ms-study-tenofovir-alafenamide-fumarate-taf-and-epstein-barr-virus-infection-in-multiple-sclerosis-a-proof-of-concept-study

For the US trial see https://clinicaltrials.gov/study/NCT05957913?lat=42.3744368&lng=-71.1182488&locStr=Harvard%20University,%20Cambridge,%20MA&distance=50&cond=multiple%20sclerosis&intr=Tenofovir%20disoproxil%20fumarate&rank=1

For a broader picture on anti-virals in MS see: Targeting Epstein–Barr virus in multiple sclerosis: when and how? Giovannoni, Gavin Current Opinion in Neurology 37(3) p 228-236, June 2024. | DOI: 10.1097/WCO.0000000000001266

Page 7 US stem cell trial sees some improvements in prog-MS

https://www.managedhealthcareexecutive.com/view/results-from-phase-ii-trial-suggest-stem-cell-treatment-may-improve-certain-symptoms-of-multiple-sclerosis

Page 8 Dormant MS reactivates with EBV disease activity

https://multiplesclerosisnewstoday.com/news-posts/2024/06/06/ebv-dormant-ms-reactivates-with-disease-activity-study/?utm_source=MS&utm_campaign=0c75df78ff-Email_ENL_NON-US_MS&utm_medium=email&utm_term=0_b5fb7a3dae-0c75df78ff-71290133

Page 9 Octopus MS trial

https://ms-octopus.mrcctu.ucl.ac.uk/

Page 10-11 Inverse vaccine feature

https://multiplesclerosisnewstoday.com/news-posts/2024/04/05/nykode-inverse-vaccine-found-prevent-ms-mouse-model/?utm_source=twitter&utm_medium=social&utm_campaign=news_ranking&utm_content=202405061800

https://www.pharmavoice.com/news/anokion-autoimmune-inverse-vaccine-biotech-

spotlight/697373/#:~:text=Unlike%20traditional%20vaccines%20that%20give,ignore%20it%20while%20functioning%20normally.

Page 12 Myelin repair drug

https://multiplesclerosisnewstoday.com/news-posts/2024/05/06/ms-society-awards-inflectis-nearly-650-k-develop-remyelination-therapy/?utm_source=MS&utm_campaign=28a053d481-Email_ENL_NON-US_MS&utm_medium=email&utm_term=0_b5fb7a3dae-28a053d481-71290133

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https://www.uib.no/en/rg/ms/126943/clinical-trials#4-the-norseman-study-nicotinamide-riboside-supplementation-in-progressive-multiple-sclerosis-a-randomised-controlled-trial

https://mstrust.org.uk/a-z/md1003-biotin

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