NEC and Transgene signs MOU for strategic collaboration aimed at treating solid cancers

NEC Corporation (NEC) and Transgene today announced the signing of a Memorandum of Understanding (MOU) for a strategic collaboration aimed at the treatment of solid cancers. The companies will cooperate in clinically assessing the predictive capabilities of NEC's artificial intelligence (AI) and the therapeutic potential of Transgene's *myvac*™ MVA-based viral vector platform in an individualized immunotherapy for the treatment of solid cancers. The experimental products from this collaboration are expected to enter clinical trials in 2019.

NEC and Transgene will co-invest in the first stage of development of an individualized immunotherapy, which includes clinical trials focusing on ovarian cancer and HPV-negative head and neck cancer.

Immunotherapy is rapidly becoming the treatment of choice to fight cancer as it activates the patient's own immune system to attack cancer cells.

NEC and Transgene have capitalized on the recent progress in AI and advances in genome sequencing to create individualized immunotherapy, which is adapted to the unique characteristics of each patient's mutational landscape as well as their predicted immune responses. The product is based on a viral vector (MVA) developed by Transgene with a proven clinical safety track record and is known for its efficient immunogenicity and anti-tumor efficacy in patients.

The viral vector will be used to target neoantigens identified

using NEC’s proprietary algorithm. NEC has been developing solutions in the drug discovery field for close to two decades. NEC’s neoantigen prediction system was developed and validated based on publicly available databases, as well as internal wet lab datasets, some of which were already used to identify clinically relevant antigens in other oncology indications.

These planned clinical trials leverage the world-leading expertise and technologies of a network of companies and research centers, including:

- NEC’s cutting-edge AI technology, “NEC the WISE”, for identifying and prioritizing patient-specific neoantigens, and
- Transgene’s unrivaled MVA-based, viral vector technology and the *myvac*™ platform.

“The emerging personalized medicine field holds great potential for the application of NEC’s core technology, and we are pleased to be working with Transgene with the goal of developing state-of-the-art personalized immunotherapies,” said Motoo Nishihara, Senior Vice President, Head of NEC Laboratories.

“Engaging the body’s own immune system in the fight against cancer has shown great promise and sparked unprecedented interest among oncology drug makers. This makes it imperative for NEC to become part of the immunotherapy race as soon as possible,” said Osamu Fujikawa, Senior Vice President, Business Innovation Unit, NEC Corporation.

“This collaboration brings together artificial intelligence and our expertise in viral vector engineering to enable the development of a truly innovative treatment based on the *myvac*™ platform. We believe that our collaboration with NEC will allow us to provide an efficacious and robust therapy for the many patients who have solid tumors and could benefit from

this cutting-edge individualized approach, and to successfully advance the development of the *myvac*™ platform to the market" said éric Quéméneur, Pharm.D., Ph.D., Executive VP, Chief Scientific Officer of Transgene.

Source:

https://www.nec.com/en/press/201810/global_20181030_02.html

Mindfulness-based program effective for reducing stress in infertile women

An eight-week mindfulness-based program was effective for reducing stress and depressive symptoms while increasing general well-being in a study of infertile women.

Ultromics expands multiple clinical trials for coronary heart disease to the U.S.

Oct 19 2018

Ultromics, the U.K. start-up behind the world's first outcomes driven, AI-based, ultrasound diagnostic support tool for

coronary artery disease (CAD), is currently supporting multiple ongoing clinical trials.

These trials include “Rainier”, based in the U.S., and “EVAREST”, which is expanding across 35 NHS sites within the U.K.

Both trials focus on the diagnosis of coronary artery disease using Ultromics’ first product, EchoGo. Results are expected within the next few months and will be submitted to the FDA with the intention of obtaining clearance for sale within the U.S.

The U.S. based Rainier trial includes a retrospective review of 550 stress exams, as well as a total of 1,600 cardiologist reads from a variety of skill levels.

The first phase of the trial is located at Oregon Health and Science University (OHSU) and is being accomplished in conjunction with leading cardiologists Dr. Sanjiv Kaul, Director of the Knight Cardiovascular Institute, and Dr. Stephen Heitner, Director of the Hypertrophic Cardiomyopathy Clinic.

The U.K. based EVAREST trial – administered by the Oxford Cardiovascular Clinical Research Facility at the University of Oxford – has successfully entered Phase III.

Phase III will deliver recruitment of 5,000 participants across 35 NHS sites, making it one of the largest echo studies in the U.K.

This phase sees continued recruitment from Phase II, with 11 new sites and a further 15 sites currently undergoing feasibility assessment to join in early 2019. This will allow for the generalisability of stress echo protocols, machine types, operators, and patient groups across different healthcare settings.

At the conclusion of these trials, Ultromics intends to prove that EchoGo is the world's most accurate echocardiography-based tool for the diagnosis of CAD.

Traditionally, clinicians use echocardiograms to diagnose a patient's condition based on just a few factors, which leads to an accurate diagnosis roughly 80% of the time under the best circumstances. EchoGo, on the other hand, uses deep learning and one of the world's largest echo image databases.

It supports clinicians by delivering greater accuracy in both sensitivity and specificity and could save healthcare payers and providers significant amounts by reducing the incidence of patients undergoing unnecessary surgical procedures.

Just as significantly, it can save lives by preventing patients with potentially fatal heart disease from being sent home.

> *Heart disease is the biggest killer globally. Of the 3 million stress exams performed in the US each year, it is estimated around 600,000 may be misread.*
>
> *This is potentially costing the US healthcare industry billions of dollars in unnecessary additional costs.*
>
> *We are determined to provide patients and providers with a reliable diagnosis, which in turn will create significant improvement to patient outcomes and savings for healthcare systems."*
>
> *Ross Upton, CEO and Founder at Ultromics*

Source:

Ultromics expands coronary artery disease trials to the U.S.

Natural wood-based bioactive substances combat antimicrobial resistance in hospitals

A recently launched development project called Sami&Samu is looking to introduce innovative renewable materials, surface finishes and textiles to Hospital Nova, a new hospital due to open in Central Finland in 2020. VTT, JAMK University of Applied Sciences and Central Finland Health Care District have joined forces to combat antimicrobial resistance in hospital environments with the help of natural wood-based bioactive substances. Another main target is to replace traditional materials with new bio-based solutions.

The structural solutions and interior design elements of Hospital Nova have been chosen with the health benefits of nature in mind. The goal is to find substitutes for oil-based plastics, reduce the volume of waste generated by the hospital and prioritize recyclable materials.

“Our aim is to make the hospital safer and more environmentally friendly. The growth and spread of microorganisms can be prevented, for example, by using wood-based materials and bioactive additives. This interdisciplinary development project is based on earlier research and involves testing the most promising materials and substances developed in connection with previous studies”, explains Project Manager **Matti Virkkunen** from VTT.

The project team will experiment with adding bioactive substances to traditional hospital materials, such as

textiles. The researchers will also test pilot versions of hospital supplies made with new surface materials or finishes, such as privacy curtains, linen and appliances previously made from oil-based plastics.

The project focuses on putting on various kinds of demonstrations and testing the most promising solutions in Central Finland Health Care District's Living Lab development environment. The project is hoped to accelerate the development and commercialization of wood-based antimicrobial and low-carbon substitutes for plastic coatings and textiles in Central Finland.

The two-year project was launched in August 2018, and its total budget is EUR657,000. The project team consists of representatives of VTT, JAMK University of Applied Sciences and Central Finland Health Care District. The project is coordinated by VTT.

Several businesses have already expressed interest in the project. Sponsors and partners include KiiltoClean Oy, Millidyne Oy, Paptic Ltd, Sakupe Oy, Serres Oy, UPM-Kymmene Corporation, Walki Oy, Welmu International Oy and Repolar Pharmaceuticals Oy.

Source:

https://www.vttresearch.com/media/news/new-wood-based-materials-to-prevent-the-spread-of-microorganisms-in-hospitals

---

New cell-based profiling

service from RBC and Promega

A new cell-based profiling service for drug discovery announced by Reaction Biology Corporation (RBC), a premier provider of drug discovery services, and Promega Corporation, a worldwide leader in the supply of life science products, will allow more researchers to better prioritize compounds earlier.

Based on Promega NanoBRET™ technology, the service measures direct target engagement of more than 50 kinases in live cells without disruption of cellular membrane integrity and will be expanded to cover more than 200 kinases in the future.

> *Our customers have been looking for a cell-based service to confirm the biochemical assay data we provide Finally, with the NanoBRET™ service, they can look at highly relevant cell-based results. The Promega assay is unique in cell-based discovery."*
>
> *Haiching Ma, RBC's Chief Science Officer*

NanoBRET™ target engagement assays are still available as kits but RBC is the first provider to create an entire panel as a service, allowing more researchers to access the technology.

"Biochemical kinase assays are a piece of the puzzle, but don't tell the whole story," says Promega Senior Research Scientist Matt Robers.

"By incorporating cellular assays at an earlier stage, researchers can get a better understanding of the impacts of live-cell physiology on the potency and selectivity of their compound. This could save development time and advance chemical matter that has a better chance of having cellular efficacy."

"Researchers have been seeking these more kinase-specific

cell-based assays at service providers, and RBC's assay optimization expertise and excellent reputation as a service provider make them the logical choice."

Promega and RBC will launch the new service at the Discovery On Target conference in Boston, September 25-28.

Web-based intervention could increase parent-adolescent communication related to sexual risk

Persistent and significant health disparities related to sexual health, including a higher teen birth rate and HIV prevalence, exist among Puerto Rican adolescents compared to other racial and ethnic adolescents. The Internet is a major platform for the dissemination of health information and has the potential to decrease health disparities and provide quality, culturally sensitive health information to disadvantaged populations. Yet, little is known about the barriers that exist related to how Latinos use web-based health information.

In an upcoming article in the journal *Nursing Research*, a study from the University of Pennsylvania School of Nursing (Penn Nursing), reports results of a web-based intervention, Cuídalos, in Puerto Rico designed to increase sexual risk communication between parents and adolescents.

"Culturally and linguistically appropriate websites, programs and materials that consider and test how Latinos access, use

and engage with resources have the potential to positively influence health outcomes," said lead-author Antonia Villarruel, PhD, RN, FAAN, Professor and the Margaret Bond Simon Dean of Nursing at Penn Nursing. "We wanted to learn about how parents would use web-based health information if given unrestricted access to that information through the Cuídalos program."

The study, Use of Web-Based Parent-Adolescent Health Promotion Program among Puerto Ricans, showed that parents with a high school education or less were more likely to access the online program than parents with a college education.

"This is an important finding in the context of Puerto Rico, where sexual education in public schools is limited and many parents and schools express traditional views of sexuality and social mores," said Villarruel. "Parents with lower education levels could have less information and skills to provide sexual health information to their children but be motivated to continue accessing Cuídalos as an important resource."

For the study, parents were recruited from community-based and school sites in the San Juan metropolitan area in Puerto Rico, and randomly assigned to a web-based, parent-adolescent sexual communication or a physical activity program. Parents were instructed to complete the two-session program within one week and had access to the program for a period of three months. Outcomes in this secondary analysis were the number of logins and self-reported access during the three-month period. Reasons for not accessing the program after the three-month period were assessed.

Despite self-reported computer and Internet access and the availability of both at study sites, parents did not frequently access the Cuídalos website, indicating that sociodemographic factors and computer and internet access could not predict use of the program.

“Further research is needed to identify how to facilitate greater access and actual use of digital health resources by Latinos,” said co-author Nelson Varas-Díaz, PhD, Professor in the Department of Global and Sociocultural Studies in the Steven J. Green School of International & Public Affairs at Florida International University. “This is an important effort in order to prevent a widening health equity gap.”

Source:

https://www.nursing.upenn.edu/live/news/1185-understanding-access-and-use-of-digital-resources

---

Natural wood-based bioactive materials to combat antimicrobial resistance in hospitals

A recently launched development project called Sami&Samu is looking to introduce innovative renewable materials, surface finishes and textiles to Hospital Nova, a new hospital due to open in Central Finland in 2020. VTT, JAMK University of Applied Sciences and Central Finland Health Care District have joined forces to combat antimicrobial resistance in hospital environments with the help of natural wood-based bioactive substances. Another main target is to replace traditional materials with new bio-based solutions.

The structural solutions and interior design elements of Hospital Nova have been chosen with the health benefits of nature in mind. The goal is to find substitutes for oil-based

plastics, reduce the volume of waste generated by the hospital and prioritise recyclable materials.

“Our aim is to make the hospital safer and more environmentally friendly. The growth and spread of microorganisms can be prevented, for example, by using wood-based materials and bioactive additives. This interdisciplinary development project is based on earlier research and involves testing the most promising materials and substances developed in connection with previous studies”, explains Project Manager Matti Virkkunen from VTT.

The project team will experiment with adding bioactive substances to traditional hospital materials, such as textiles. The researchers will also test pilot versions of hospital supplies made with new surface materials or finishes, such as privacy curtains, linen and appliances previously made from oil-based plastics.

The project focuses on putting on various kinds of demonstrations and testing the most promising solutions in Central Finland Health Care District’s Living Lab development environment. The project is hoped to accelerate the development and commercialisation of wood-based antimicrobial and low-carbon substitutes for plastic coatings and textiles in Central Finland.

The two-year project was launched in August 2018, and its total budget is EUR 657,000. The project team consists of representatives of VTT, JAMK University of Applied Sciences and Central Finland Health Care District. The project is coordinated by VTT.

Source:

https://www.vttresearch.com/media/news/new-wood-based-materials-to-prevent-the-spread-of-microorganisms-in-hospitals

Smart textile-based soft robotic exosuit helps wearers save energy and traverse difficult terrain

In the future, smart textile-based soft robotic exosuits could be worn by soldiers, fire fighters and rescue workers to help them traverse difficult terrain and arrive fresh at their destinations so that they can perform their respective tasks more effectively. They could also become a powerful means to enhance mobility and quality of living for people suffering from neurodegenerative disorders and for the elderly.

Conor Walsh's team at the Wyss Institute for Biologically Inspired Engineering at Harvard University and the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) has been at the forefront of developing different soft wearable robotic devices that support mobility by applying mechanical forces to critical joints of the body, including at the ankle or hip joints, or in the case of a multi-joint soft exosuit both. Because of its potential for relieving overburdened solders in the field, the Defense Advanced Research Projects Agency (DARPA) funded the team's efforts as part of its former Warrior Web program.

While the researchers have demonstrated that lab-based versions of soft exosuits can provide clear benefits to wearers, allowing them to spend less energy while walking and running, there remains a need for fully wearable exosuits that are suitable for use in the real world.

Now, in a study reported in the proceedings of the 2018 IEEE

International Conference on Robotics and Automation (ICRA), the team presented their latest generation of a mobile multi-joint exosuit, which has been improved on all fronts and tested in the field through long marches over uneven terrain. Using the same exosuit in a second study published in the *Journal of NeuroEngineering and Rehabilitation* (*JNER*), the researchers developed an automatic tuning method to customize its assistance based on how an individual's body is responding to it, and demonstrated significant energy savings.

The multi-joint soft exosuit consists of textile apparel components worn at the waist, thighs, and calves. Through an optimized mobile actuation system worn near the waist and integrated into a military rucksack, mechanical forces are transmitted via cables that are guided through the exosuit's soft components to ankle and hip joints. This way, the exosuit adds power to the ankles and hips to assist with leg movements during the walking cycle.

"We have updated all components in this new version of the multi-joint soft exosuit: the apparel is more user-friendly, easy to put on and accommodating to different body shapes; the actuation is more robust, lighter, quieter and smaller; and the control system allows us to apply forces to hips and ankles more robustly and consistently," said David Perry, a co-author of the ICRA study and a Staff Engineer on Walsh's team. As part of the DARPA program, the exosuit was field-tested in Aberdeen, MD, in collaboration with the Army Research Labs, where soldiers walked through a 12-mile cross-country course.

"We previously demonstrated that it is possible to use online optimization methods that by quantifying energy savings in the lab automatically individualize control parameters across different wearers. However, we needed a means to tune control parameters quickly and efficiently to the different gaits of soldiers at the Army outside a laboratory," said Walsh, Ph.D., Core Faculty member of the Wyss Institute, the John L. Loeb

Associate Professor of Engineering and Applied Sciences at SEAS and Founder, of the Harvard Biodesign Lab.

In the JNER study, the team presented a suitable new tuning method that uses exosuit sensors to optimize the positive power delivered at the ankle joints. When a wearer begins walking, the system measures the power and gradually adjusts controller parameters until it finds those that maximize the exosuit's effects based on the wearer's individual gait mechanics. The method can be used as a proxy measure for elaborate energy measurements.

"We evaluated the metabolic parameters in the seven study participants wearing exosuits that underwent the tuning process and found that the method reduced the metabolic cost of walking by about 14.8% compared to walking without the device and by about 22% compared to walking with the device unpowered," said Sangjun Lee, the first author of both studies and a Graduate Student with Walsh at SEAS.

"These studies represent the exciting culmination of our DARPA-funded efforts. We are now continuing to optimize the technology for specific uses in the Army where dynamic movements are important; and we are exploring it for assisting workers in factories performing strenuous physical tasks," said Walsh. "In addition, the field has recognized there is still a lot to understand on the basic science of co-adaptation of humans and wearable robots. Future co-optimization strategies and new training approaches could help further enhance individualization effects and enable wearers that initially respond poorly to exosuits to adapt to them as well and benefit from their assistance".

"This research marks an important point in the Wyss Institute's Bioinspired Soft Robotics Initiative and its development of soft exosuits in that it opens a path on which robotic devices could be adopted and personalized in real world scenarios by healthy and disabled wearers," said Wyss

Institute Founding Director Donald Ingber, M.D., Ph.D., who is also the Judah Folkman Professor of Vascular Biology at HMS and the Vascular Biology Program at Boston Children's Hospital, and Professor of Bioengineering at SEAS.

Source:

https://wyss.harvard.edu/multi-joint-personalized-soft-exosuit-breaks-new-ground/

Propofol May Decrease Delay in Neurocognitive Recovery

WEDNESDAY, Sept. 12, 2018 — For older cancer patients undergoing major cancer surgery, propofol-based general anesthesia may reduce the incidence of delayed neurocognitive recovery versus sevoflurane-based general anesthesia, according to a study published in the September issue of the *British Journal of Anesthesia*.

Y. Zhang, from the Peking University First Hospital in China, and colleagues randomized 392 older adults who were scheduled to undergo major cancer surgery to receive propofol- or sevoflurane-based general anesthesia. Cognitive function was assessed with a battery of neuropsychological tests before and

one week after surgery (379 patients completed one-week neuropsychological testing). A total of 59 age-and education-matched non-surgical controls were recruited and underwent cognitive function testing at comparable time intervals.

The researchers found that, compared with the sevoflurane group, the propofol group had significantly lower incidence of delayed neurocognitive recovery at one week (14.8 versus 23.2 percent; odds ratio, 0.577). The two groups did not differ in terms of safety outcomes.

“Compared with sevoflurane-based general anesthesia, propofol-based general anesthesia reduced the incidence of delayed neurocognitive recovery in elderly patients at one week after major cancer surgery,” the authors write.

Several authors disclosed financial ties to the pharmaceutical industry.

Abstract/Full Text

Posted: September 2018

Broad Genetic Testing for NSCLC May Not Improve

Survival

WEDNESDAY, Aug. 15, 2018 — Broad-based genomic sequencing does not improve survival compared to routine genetic testing among patients with advanced non-small-cell lung cancer (NSCLC), according to a study published in the Aug. 7 issue of the *Journal of the American Medical Association*.

Carolyn J. Presley, M.D., from The Ohio State University in Columbus, and colleagues compared clinical outcomes between 5,688 patients with advanced NSCLC who received broad-based genomic sequencing and 4,813 patients who received routine testing for *EGFR* mutations and/or *ALK* rearrangements alone.

The researchers found that 4.5 percent of patients who received broad-based genomic sequencing received targeted treatment based on testing results, 9.8 percent received routine *EGFR/ALK*-targeted treatment, and 85.1 percent received no targeted treatment. At 12 months, unadjusted mortality rates were 49.2 percent for patients undergoing broad-based genomic sequencing and 35.9 percent for patients undergoing routine testing. There was no significant association between broad-based genomic sequencing and 12-month mortality, according to the results of an instrumental variable analysis.

“To ensure that new discoveries are able to fulfill their promise, our results suggest further evidence is needed to inform the care of patients with a variety of specific genetic alterations in their tumors before widely disseminating these new paradigms into clinical practice,” a coauthor said in a statement.

Several authors disclosed financial ties to the pharmaceutical industry.

Abstract/Full Text (subscription or payment may be required)
Editorial (subscription or payment may be required)

Posted: August 2018

New project aims to study growth of water-based microorganisms

August 14, 2018

Karl Landsteiner University of Health Sciences in Krems launches project to study the growth of water-based microorganisms

In order to better understand and assess the quality of ground and spring water, state-of-the-art methods from the fields of molecular biology and microbiology, as well as chemical high-performance analytics are now developed. This has been made possible by a project currently underway at the Karl Landsteiner University of Health Sciences (KL Krems). The aim of the project is to combine new technologies across a number of disciplines to evaluate the growth of water-based bacteria and their biochemical processes. This will make it possible to determine and predict the biostability of water with much more

accuracy than before, thus making a fundamental contribution to water hygiene and health. The project, which is funded by the federal state of Lower Austria, is based on internationally recognized research conducted at the Interuniversity Cooperation Center Water & Health (ICC Water & Health) and at the Department of Agrobiotechnology, IFA-Tulln, University of Natural Resources and Life Sciences Vienna, which enable bacteria and their activities in water samples to be precisely characterized.

Water is not just H2O when it bubbles up as ground or spring water, for example. It also contains a myriad of microorganisms whose natural habitat is the cool water. Up until now, very little has been known about how the water-based bacterial community develops in ground and source water. It is therefore still difficult to ascertain or predict its potential effect on the quality of the water after it is stored and distributed. At KL Krems, a project funded by the FTI Program, a program run by the federal state of Lower Austria, has taken this issue on board and is developing a pioneering combination of processes that are designed to facilitate, for the first time, a comprehensive analysis of the dynamic of water-based bacteria and thus of the associated biochemical key processes when water resources are used.

“READY TO GO!” FOR AQUASCREEN

Prof. Andreas Farnleitner is coordinating the AQUASCREEN project, as it is known. The Head of the Department of Water Quality and Health at KL Krems explains the background to the project: “Existing standard methods to detect microorganisms in ground and spring water are based on principles dating back to the 19th century. These focus mainly on bacteria that pollute the water from the surface rather than water-based bacteria, some of which we know absolutely nothing about. Less than 1% of water-based bacteria can generally be detected using the standard methods. Up until now, therefore, we have

known very little about the development of these natural water microbiota and how they can affect the quality of the water over longer periods when it is stored and distributed. A better understanding of these dynamics, including the existing nutrient and environment situation, is necessary to assess and predict the quality of drinking water but also to identify potential health risks.”

INTO THE 21ST CENTURY WITH AQUASCREEN

In cooperation with ICC Water & Health, IFA-Tulln and EVN Wasser GesmbH, a new combination of processes is being developed. This will be able to determine the existence and growth of water-based bacteria more directly and with more accuracy and speed. In order to achieve this, following a simulation of the storage of water, the team will deploy state-of-the-art sequencing techniques and cytometric methods in which bacterial cells are stained with a fluorescent dye and optically captured. The advantages of these methods are obvious for Prof. Farnleitner’s team colleagues, Prof. Alexander Kirschner and Prof. Regina Sommer, who are based at the Institute for Hygiene and Applied Immunology at the Medical University of Vienna. Prof. Kirschner says: “It will be possible to directly detect and identify the actively growing populations of the water-based bacterial communities, and not just to search indirectly for selected indicator bacteria, which could indicate external contamination.” Based on this, Dr. Wolfgang Kandler at IFA Tulln will link this process with a third element – chemical high-performance analytics. This should make it easier to trace both the existence and growth of water-based bacteria and the associated biochemical key processes in water supply.

FTI PROGRAM SUPPORTS RESEARCH

The project is supported by the federal state of Lower Austria with funding provided by the FTI Program, which has an interdisciplinary focus on nutrition, medicine and health. The federal state is thereby making a significant contribution to the further expansion of KL Krems focus on water quality and health. AQUASCREEN can thus build seamlessly on current results generated by NÖ Forschungs- und Bildungsges.m.b.H. (NFB) as part of the AQUASAFE project funded by Science Call 2015. This project develops and refines a new approach to determine the origin of faecal contamination in water. In addition, highly specific, quantitative evidence of minute quantities of genetic material (DNA) from specific human and animal gut bacteria is developed. Thanks to the consistent support of this research work, KL Krems has managed, within a short space of time, to make important contributions to health and quality of life through its research on water quality and health.

Infant growth patterns affected by type of protein consumed

Credit: CC0 Public Domain

A new study by CU School of Medicine researchers has determined that choices of protein intake from solid foods has a significant impact on infant growth during the first year of life.

The study tested whether dairy-based or meat-based protein in an infant's diet contributed to growth and weight gain. Sixty-four formula-fed infants were involved in the study, with the group evenly divided between those who ate dairy and those who ate meat in addition to their formula, fruits, vegetables and infant cereals.

"Although breastfeeding should be the norm, majority of the U.S. infants are formula fed and limited research has focused on formula-fed infants. We found that the source of protein may have an important role in regulating growth," said Minghua Tang, Ph.D., assistant professor of pediatrics, who led the study. "Infants who consumed meat-based solid foods had a greater length gain while both groups gain similar weight."

The study, published recently by the *American Journal of Clinical Nutrition*, is perhaps the first of its kind to

evaluate the effect of protein from different food sources on growth in formula-fed infants during the first year of life. Such studies can provide evidence-based feeding guidance that can yield long-term benefits for optimal growth and obesity prevention.

To conduct the study, the investigators recruited families in metro Denver with full-term, formula-fed infants who were three to five months old. If eligible, they were screened with a baseline visit and once enrolled they were randomized into dairy-based and meat-based groups. Those on the meat-based diet complemented their usual eating with commercially available pureed meats, while the dairy-based added infant yogurt, cheese and a powdered concentrate of whey protein.

From five to 12 months, the infants were measured for length, weight and head circumference. Blood samples were collected at baseline visit and again at the end of the study. Sources of protein did not seem to affect intake because both groups reported similar amounts of total calories, protein and fat consumption.

Based on the measurements, meat-based complementary foods promoted greater length. The analysis showed the length-for-age increased in the meat group and declined in the dairy group relative to the growth charts. At the same time, the weight-for-length measurements, similar to a “Body Mass Index” for infants, significantly increased in the dairy group compared with the meat group.

Explore further:
Research explores healthy weight gain in infants

More information:
Minghua Tang et al, A meat- or dairy-based complementary diet leads to distinct growth patterns in formula-fed infants: a randomized controlled trial, *The American Journal of Clinical*

Nutrition (2018). DOI: 10.1093/ajcn/nqy038

Journal reference:
American Journal of Clinical Nutrition

Provided by:
CU Anschutz Medical Campus

Johnson & Johnson Announces Publication in The Lancet Highlighting Robust Immune Response to Janssen's Mosaic-based Preventive Vaccine Regimen for HIV

NEW BRUNSWICK, N.J., 6 July 2018 –Johnson & Johnson today announced that The Lancet has published key early-stage data regarding an investigational mosaic-based preventive vaccine regimen against HIV-1 infection that is in development at its Janssen Pharmaceutical Companies. In the Phase 1/2a APPROACH study, based on the data generated, the vaccine regimen was safe and well-tolerated and elicited a robust HIV antibody response in all healthy volunteers receiving active vaccine. Additionally, in a parallel study in non-human primates (NHPs), the most immunogenic mosaic-based vaccine regimen in humans demonstrated similar immune responses in NHPs and afforded 67% protection against an HIV-like virus.

The Lancet paper provides the first detailed analysis of

topline results presented by Janssen at the 9th IAS Conference on HIV Science (IAS 2017) in July 2017, and supports the recent advancement of the mosaic-based vaccine regimen into its first large-scale efficacy study.

“These are promising but still early-stage results. At 52 weeks, we observed that the mosaic-based vaccine regimen induced robust and comparable immune responses to HIV in humans and in nonhuman primates, and the vaccine protected against infection with an HIV-like virus in nonhuman primates,” said Professor Dan Barouch, Harvard Medical School, Director of the Center for Virology and Vaccine Research at Beth Israel Deaconess Medical Center and a lead author of The Lancet paper.

Janssen’s investigational mosaic-based vaccine regimen contains immunogens created using genes from different viral subtypes responsible for HIV infections worldwide.

“The progress made in the last thirty years in the fight against HIV is remarkable, yet HIV still persists as a global health threat affecting millions,” said Paul Stoffels, M.D., Vice Chairman of the Executive Committee and Chief Scientific Officer, Johnson & Johnson. “The genetic diversity inherent in HIV brings many challenges, but we are committed to developing a ‘global vaccine’ effective against the multiple strains of the virus. Our quest is to develop a vaccine that would put an end to the worldwide pandemic for good.”

In addition to the results reported in The Lancet, the first long-term immunological data from the APPROACH study will be presented in an oral presentation at the 22nd International AIDS Conference (AIDS 2018) on Tuesday, July 24, 2018 in Amsterdam, The Netherlands.

Based on results from APPROACH and other early-stage studies, in November 2017 Janssen and its global partners initiated the first efficacy study for a mosaic-based vaccine regimen. The

Phase 2b trial, HVTN 705/HPX2008 (also known as 'Imbokodo'), aims to enroll 2,600 young women aged 18-35 in five sub-Saharan African countries to see whether the vaccine is safe and able to reduce HIV infection in this at-risk population. Participants are now enrolling at clinical research sites in South Africa, Zimbabwe and Malawi. The study has been cleared to start in Zambia, and regulatory approval is pending in Mozambique. Results from HVTN 705/ HPX2008 are expected in 2021.

"The HVTN 705/HPX2008 trial is built on a partnership with our global communities, Janssen and other stakeholders who are committed to finding an effective HIV vaccine. The imperative, if we are successful, is to then make sure that the effective HIV vaccine can be taken to scale and is accessible", says Larry Corey, M.D., Principal Investigator of the HVTN, virologist and faculty member at Fred Hutchinson Cancer Research Center.

Although great progress has been made in the fight against HIV/AIDS, a safe and effective vaccine will likely be required to truly end the HIV pandemic. In 2016, nearly 37 million people were living with HIV globally, 1.8 million people were newly infected with HIV, and 1 million people died of AIDS.[i]

About the APPROACH and NHP Bridging Studies

APPROACH (HIV-V-A004/NCT02315703) is a Phase 1/2a study in 393 healthy HIV-uninfected adults in the U.S., Rwanda, Uganda, South Africa and Thailand. It is evaluating the safety, tolerability and immunogenicity of various mosaic-based vaccine regimens for HIV-1. These vaccine regimens contain two prime doses (weeks 0 and 12) of the mosaic viral vector Ad26.Mos.HIV, utilizing Janssen's AdVac® technology based on adenovirus serotype 26 (Ad26), followed by two boosts (weeks 24 and 48) of either Ad26.Mos.HIV, MVA-Mosaic and/or different

doses of the soluble protein Clade C gp140 adjuvanted with aluminum phosphate. By first priming and then boosting the immune system, the goal is to produce a strong and long-lasting immune response to HIV.

At 52 weeks, four weeks after the last vaccine dose, all vaccine regimens evaluated in APPROACH were safe and generally well-tolerated. Additionally, all regimens elicited robust humoral and cellular HIV-1 immune responses. The most immunogenic regimen in humans comprised mosaic Ad26 as the prime, and Ad26+gp140 as the boost. It elicited Env-specific binding antibody responses, antibody-dependent cellular phagocytosis responses, and T-cell responses in 100%, 80% and 83% of recipients, respectively. In a parallel bridging study in NHPs (n=72), the same Ad26/Ad26+gp140 vaccine regimen induced a similar magnitude, durability, and phenotype of immune responses, and afforded 67% protection against acquisition of infection with simian-human immunodeficiency virus (SHIV).

Janssen's partners on the APPROACH study included Beth Israel Deaconess Medical Center (BIDMC), Harvard Medical School; the United States Military HIV Research Program (MHRP) at the Walter Reed Army Institute of Research (WRAIR), with the Henry M. Jackson Foundation for the Advancement of Military Medicine (HJF); the National Institute of Allergy and Infectious Diseases (NIAID), part of the US National Institutes of Health (NIH); the Ragon Institute of Massachusetts General Hospital, MIT and Harvard; the International AIDS Vaccine Initiative (IAVI); and the HIV Vaccine Trials Network (HVTN).

Since 2005, Janssen Vaccines & Prevention B.V. has been participating in the NIH-supported Integrated Preclinical/Clinical AIDS Vaccine Development (IPCAVD) program under grants AI066305, AI078526 and AI096040.

Visit www.jnj.com/HIV to learn more about the breadth of HIV science being pursued by the Janssen Pharmaceutical Companies

of Johnson & Johnson and its partners across prevention, treatment and cure research.

About Johnson & Johnson

At Johnson & Johnson, we believe good health is the foundation of vibrant lives, thriving communities and forward progress. That’s why for more than 130 years, we have aimed to keep people well at every age and every stage of life. Today, as the world’s largest and most broadly-based health care company, we are committed to using our reach and size for good. We strive to improve access and affordability, create healthier communities, and put a healthy mind, body and environment within reach of everyone, everywhere. We are blending our heart, science and ingenuity to profoundly change the trajectory of health for humanity.

About the Janssen Pharmaceutical Companies

At the Janssen Pharmaceutical Companies of Johnson & Johnson, we are working to create a world without disease. Transforming lives by finding new and better ways to prevent, intercept, treat and cure disease inspires us. We bring together the best minds and pursue the most promising science. We are Janssen. We collaborate with the world for the health of everyone in it. Learn more at www.janssen.com. Follow us at @JanssenGlobal.

Janssen Vaccines & Prevention B.V. is part of the Janssen Pharmaceutical Companies of Johnson & Johnson.

Cautions Concerning Forward-Looking Statements

This press release contains “forward-looking statements” as defined in the Private Securities Litigation Reform Act of 1995, regarding development of a potential preventive vaccine

for HIV. The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Janssen Vaccines & Prevention B.V., any of the other Janssen Pharmaceutical Companies and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research and development, including the uncertainty of clinical success and of obtaining regulatory approvals; uncertainty of commercial success; manufacturing difficulties and delays; competition, including technological advances, new products and patents attained by competitors; challenges to patents; product efficacy or safety concerns resulting in product recalls or regulatory action; changes in behavior and spending patterns of purchasers of health care products and services; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and descriptions of these risks, uncertainties and other factors can be found in Johnson & Johnson's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 including in the sections captioned "Cautionary Note Regarding Forward-Looking Statements" and "Item 1A. Risk Factors," and in the company's subsequent Quarterly Reports on Form 10-Q and other filings with the Securities and Exchange Commission. Copies of these filings are available online at www.sec.gov, www.jnj.com or on request from Johnson & Johnson. None of the Janssen Pharmaceutical Companies or Johnson & Johnson undertakes to update any forward-looking statement as a result of new information or future events or developments.

[i] WHO. HIV / AIDS Factsheet. Available at: http://www.who.int/mediacentre/factsheets/fs360/en/ Last accessed: February 2018.

Source: Johnson & Johnson

Posted: July 2018

Novel plasmonic patch increases brightness in diagnostic tests

July 10, 2018

Fluorescence-based biosensing and bioimaging technologies are widely used in research and clinical settings to detect and image various biological species of interest. While fluorescence-based detection and imaging techniques are convenient to use, they suffer from poor sensitivity. For example, when a patient carries low levels of antigens in the blood or urine, the fluorescent signal can be feeble, making visualization and diagnosis difficult. For this reason, fluorescence-based detection is not always preferred when sensitivity is a key requirement.

A multidisciplinary team at Washington University in St. Louis and the Air Force Research Laboratory (AFRL) at Wright-Patterson Air Force Base has developed a high-tech fix that utilizes metal nanostructures to increase the fluorescence intensity by 100 times in these diagnostic tests. It’s a cheap and easy solution to what’s previously been a vexing diagnostic problem.

“Using fluorescence for biodetection is very convenient and easy, but the problem is it’s not that sensitive, and that’s why researchers don’t want to rely on it,” said Srikanth

Singamaneni, professor of mechanical engineering & material science at the School of Engineering & Applied Science.

As the team recently explained in the journal *Light: Science and Applications*, techniques to boost the signal – such as relying on enzyme-based amplification – require extra steps that prolong the overall operation time, as well as specialized and expensive read-out systems in some cases.

However, the "plasmonic patch" developed by Singamaneni and co-workers doesn't require any change in testing protocol. The patch is a flexible piece of film about a centimeter square, embedded with nanomaterials. All a researcher or lab tech needs to do is prepare the sample in the usual method, apply the patch over the top, and then scan the sample as usual.

"It's a thin layer of elastic, transparent material with gold nanorods or other plasmonic nanostructures absorbed on the top," said Jingyi Luan, a graduate student in the Singamaneni Lab and primary author of the manuscript. "These nanostructures act as antennae: they concentrate light into a tiny volume around the molecules emitting fluorescence. The fluorescence is dramatic, making it easier to visualize. The patch can be imagined to be a magnifying glass for the light."

Singamaneni said the newly developed patch is a cheap fix – costing only about a nickel per application – and one that contains not only research applications but also diagnostics. It could be particularly useful in a microarray, which enables simultaneous detection of tens to hundreds of analytes in a single experiment.

"The plasmonic patch will enable the detection of low abundance analytes in combination with conventional detection methodologies, which is the beauty of our approach," said Rajesh Naik, chief scientist of AFRL's 711th Human Performance Wing.

"It's a last step, just like a Band-Aid," Singamaneni said.

“You apply it, and the dimness problem in these fluorescence-based detection methods is solved.”

Source:

New patch boosts brightness in medical diagnostic tests

Internet-based support system found to be effective in improving weight loss

July 5, 2018

In a randomized long-term lifestyle change trial, an Internet-based health behavior change support system (HBCSS) was effective in improving weight loss and reduction in waist circumference for up to 2 years. The findings are published in the *Journal of Internal Medicine*.

The 532-participant trial included 6 arms: cognitive behavioral therapy (CBT)-based group counseling, self-help guidance-based group counseling, and control, each with and without HCBSS. Interventions using the HBCSS had significantly higher success rates at losing weight and maintaining weight loss, regardless of the type of group counseling, compared with counseling alone. In addition, the success rate was also high in participants in the control group who received HBCSS.

CBT-based counseling with HBCSS produced the largest weight reduction without any significant weight gain during follow-up. The average weight change in this group was 4.1% at 12

months and 3.4% at 24 months. HBCSS even without any group counseling reduced the average weight by 1.6% at 24 months.

“Modifiable tools based on scientific evidence are needed for personalized treatment of obesity. HBCSS combined with cognitive behavioral group therapy or as a stand-alone treatment provides us with such a modifiable method for personalized medicine,” said co-lead author Dr. Tuire Salonurmi, of University of Oulu and Oulu University Hospital, in Finland.

Source:

http://newsroom.wiley.com/press-release/journal-internal-medicine/web-based-support-system-may-help-people-lose-weight-and-kee