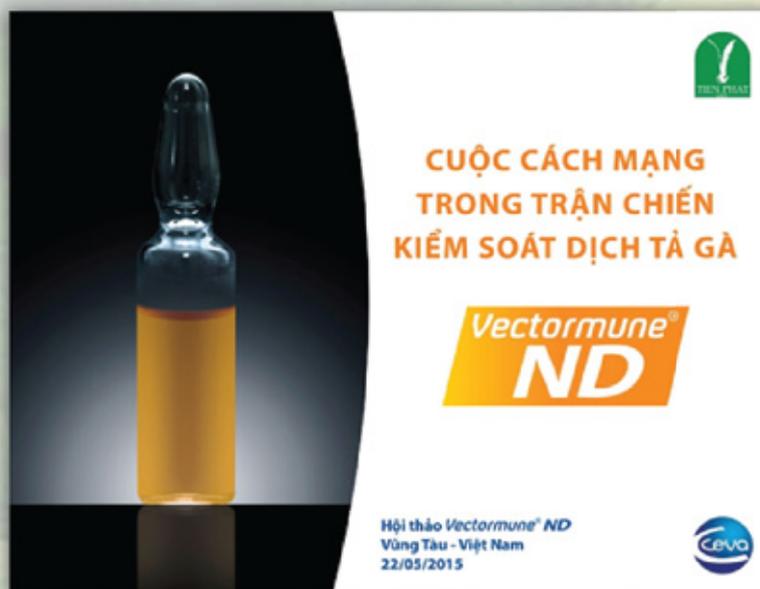


New Technology Vaccine enhances Resistance for Newcastle Disease

Bangladesh achieved remarkable livestock product growth of 5.4% and a stable Gross Domestic Production (GDP) contribution of 2.1–3.6% by the livestock sector was made. Interestingly, both the growth and GDP contribution are largely dominated by the poultry sector. Although the poultry industry was hit by bird flu in 2007 and 2009, we have achieved self-sufficiency in chicken and egg production. Taking the learnings from the past, we need to be well-prepared for such epidemics in the poul-

try industry. Newcastle disease is a very contagious disease, affecting the poultry industry. ND is endemic to many countries of the world. Newcastle disease virus can also be transmitted to humans.

Reducing losses of large numbers of chickens to virulent Newcastle disease virus is an essential first step to improving their productivity. Newcastle disease can be controlled by the use of vaccines. There are many Newcastle disease vaccines suitable for use in commercial chick



ens. However, study suggests that the susceptibility of vaccinated poultry to Newcastle disease infection is not the result of vaccine mismatch, but rather of poor vaccination practices. There are mainly two major problems associated with vaccination against Newcastle Disease (ND): interference between passive immunity and (conventional) ND vaccines and quality of administration. To overcome the problems, we need new technology vaccine in hatchery & less dw vaccination in the field. Keeping this in mind, we, along with Ceva, are launching

Vectormune® ND vaccine against Newcastle Disease for the first time in Bangladesh. This new technology vaccine with homogeneous protection, convenience, long lasting protection and safety will enable our poultry industry to be one step forward in terms of protection from the Newcastle disease.

Dr. F H Ansarey
Executive Director
ACI Agribusiness

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How Farming Changed the Human Genome



The introduction of agriculture into Europe about 8,500 years ago changed the way people lived right down to their DNA.

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Breeding for quality traits in food crops to satisfy nutritional food security in Bangladesh

A successful cultivar in any food crops must meet minimal criteria for numerous traits that are currently or potentially valued in the marketplace. A time has come when the consumers have started realizing the importance of the food quality more specifically of the nutrients balances in the products. The purchase of food products is stimulated based on “quality” traits innate to the food such as flavor, color, shape, size, degree of damage, and nutrient levels. The first challenge for a breeder is to determine which traits are most important. In a subsistence situation, focusing on content of key nutrients that are deficient in a diet that may lack quantity and diversity may be of utmost importance. While in a commercial agriculture, the food products are more determined by the contents of specific nutrients like the protein or the gluten or the amylase or the erucic acid content in the raw products, the variety. Available research has demonstrated that quality enrich traits are available within the genome of major staple crops that could allow for substantial improvement in quality without negatively impacting yield. Plant breeding aimed at developing cultivars with improved genetic constitution to serve diverse human needs depend on genetic resources based on breeding tools and the vision to apply breeding approaches.

Being the most important staple crop rice crop needs special breeding attention as to its quality nutrient supply provisions. The total cropped area of Bangladesh is

33422 thousand acres of which 26130 thousand acres are used for rice cultivation. Rice provides about 75% of the total calories and 55% of the proteins in the average daily diet of the 160 million population of Bangladesh. With the percentage of diabetic population rising by 5-6% annually, it is just not enough to increase yield of rice, but also include quality traits to make the grain suitable to the changing diets. The Glycemic index is a useful aid for diabetes management and for people who wish to keep control over their blood glucose levels. Diets based on foods with low Glycemic response have been found to have slow energy releasing carbohydrate helping carbohydrate food intake and thereby low level of blood glucose. Also found to improve blood lipids (cholesterol), reduced risk of heart disease, and weight management.

The rice breeders of today must, therefore, need to put more attention to the quality traits so that the varieties can be developed with high amylase between 25 and 27% while low Glycemic index like the variety BR-16. A molecular breeding approach will help more effective selection using MABC technique of the specific traits for specific variety. The support of MsAdeeba Raihan is highly acknowledged..

Prof. Lutfur Rahman

Advisor, ACI Agribusiness & Head of Advanced Seed Research & Biotech Centre



Innovation and New Products

E-Carbzol Injection

On 29 November 2015, ACI Animal Health Launched E-Carbzol Injection - a unique product for the treatment of Babesiosis and Anaplasmosis. Each ml of E-Carbzol contains Imidocarb-dipropionate 120 mg, Methyl parahydroxybenzoate 0.45 mg, Propyl parahydroxybenzoate 0.05 mg. Imidocarb-dipropionate is aqueous solution highly active against infection caused by adult and immature stages of Babesia in cattle, sheep, goat, horse and against Anaplasma infection in cattle and horses. Imidocarb acts by combining with nucleic acids of DNA in susceptible organisms,

causing the DNA to unwind and denature. This damage of DNA is believed to inhibit cellular repair and replication. E-Carbzol (imidocarb-dipropionate) exerts its action through two mechanisms- Interference with the production and utilization of polyamines and Prevention of entry of inositol into the erythrocyte containing the parasite. E-Carbzol can be used for the prevention and treatment of babesiosis in cattle, sheep, goat and horse, for the treatment of anaplasmosis in cattle and horse. It is available in 100 ml bottle.



Aci-Phytase 400

Aci-Phytase 400 is a phytase feed enzyme developed for increasing digestibility of phytinbound phosphorus, calcium and amino acids in poultry. Each gm powder contains- Phytase 400 FTU. Aci-Phytase 400 liberates the phosphate and mineral residues from phytic acid. It is used for breaking down and increasing the nutritional quality of grain, legumes, seeds, and corn. Aci-Phytase 400 increases the bioavailability of minerals, and the body's ability to absorb and assimilate vital minerals such as calcium, magnesium, and iron. It reduces the

negative effect of phytic acid by hydrolysis of insoluble complexes (anti-nutritional factor) of minerals and protein with phytic acid. Aci-Phytase 400 also reduces mineral deficiency by increasing mineral uptake and reduce phytate content in both cereals and legume-derived food products. Additionally it lowers feed costs and helps to reduce osteoporosis. It is manufactured by FRamelco (The Netherlands). Aci-Phytase 400 is launched by ACI Animal Health on 29 November 2015. It is available in 1 kg pack.



Events and Activities

M4C Project: Progress in November 2015

Under the M4C Project, balanced fertilization is being promoted in the Char Area of Bogra, Gaibandha, Sirajgonj, Tangail, Jamalpur, Rangpur, Kurigram, Lalmonirhat&Nilphamari. ACI Fertilizer is working with M4C project planned by Swisscontact for the development of farmers of Char area through ensuring quality inputs from ACI Fertilizer and developing the retail channel to the cultivation of Rice, Maize, Chili, Vegetable, Onion, Mustard, Ground Nut and Jute.

ACI Fertilizer organized 9 retailer training programs, 105

Farmers' Training Program, 11 Farmers' Campaign Program and 21 Result Demonstration in the project area in November 2015. The Field Force of ACI Fertilizer including Zonal Manager, Area Manager, Territory Officer and Field Supervisor executed the programs with the support of M4C Project Coordinators and Local NGOs. ACI Fertilizer is working on this project for the successive 3rd year to build awareness among the farmers and traders about quality inputs & help to improve their cultivation practice.



Balanced Fertilization: New Contract with Innovision

ACI recently signed a contract with Innovision for strengthening the promotion of micronutrients and dissemination of information on balanced fertilizer application through distribution channels. The Fertilizer Market Development project of Innovision is funded by KATALYST, mandated to promote the balanced application of fertilizers for crop production focused in vegetables, maize and rice sub-sectors to improve soil fertility condition. Under this contract, ACI will conduct field promotional activities for the current crop season covering 34 districts across the country. Thus the partnership with ACI will cover approximately 1400 agricultural input dealers and retailers, and around 12000 small and marginal farmers through training, demonstration, field day.



Events and Activities

Training Programs for Potato Farmers by ACI Fertilizer

Considering the problems & potentials of farmers, ACI Fertilizer organized several training programs for the contact farmers of BADC in potato-based agricultural areas of Comilla, Chandpur, Bogra, Rangpur and Dinajpur.

Zonal Manager, Area Manager and Territory Officers conducted the programs with the support of BADC and DAE. The Field Force conducted more than 50 programs in November 2015 to promote the products successfully.



Submersible Water Pump Installed at CRS, Gazipur

On 26 November 2015, Central Research Station was equipped with a submersible irrigation pump by ACI Seed. The pump will support to carry out irrigation in 6/7 acres of land successfully. Effective irrigation is crucial

for the research program to become successful. ACI Motors has technically contributed in the installation process within a very short period of time.



Events and Activities

ACI Motor's Recognized Platinum Water Pump Dealers

ACI Motors recognized the best achiever water pump dealers as platinum dealers in a recent meet-up. The meet-up was held on 21 November 2015 at ACI Center

in Dhaka. 30 platinum dealers were invited to the event. The meet-up was followed by a cultural function and dinner.



Integrated Supply of Bottle Gourd by ACI Agrolink

For the first time, ACI Agrolink Limited (Cropex business) has initiated the supply of ACI Seed's own R&D variety of pesticides-free Bottle Gourd (Lau) to all the outlets of ACI Logistics (Shwapno). The names of the bottle gourd are Marshal Super and Moyna. The bottle gourds are grown in a controlled environment of Research & Development facility in RDA, Bogra under organic production system which has allowed them to become virus-free as

well as heat tolerant. It enables them to be grown throughout the year. The customer feedback from those outlets was immensely positive allowing the bottle gourd's to gain wide appreciation due to its quality. Apart from the high quality and taste of the bottle gourds, the production in the controlled environment ensures safe and hygienic vegetables to be consumed by our consumers.



ACI Agrolink: Export Expansion to UK



ACI Agrolink Limited (Cropex business) has expanded its export market by supplying its first consignment of fresh vegetables to the United Kingdom for the first time after Sesame seed, Soybean seed and Castor seed to China and Taiwan. Growing potential in the UK and Europe market has opened vast opportunities to export agricultural products in the international market besides serving the domestic consumers. The existing export

destinations of our fresh vegetables and other agro products are China, Malaysia, and Dubai. Globalization and market liberalization have opened up new opportunities for exporting agricultural products from Bangladesh. Promotion of these agricultural export can be looked upon as an important instrument for boosting growth in the rural economy and creating conditions for improving the wealth of farmers.



Launching of Vectormune ND in Bangladesh



Vectormune ND vaccine against Newcastle & Mareks Disease 1st time in Bangladesh has been launched by ACI and Ceva with shining ceremony on 1st December, 2015 at Six Seasons Hotel, Dhaka.

Mr. Md. Maksudul Hasan Khan, Secretary, Ministry of Fisheries

& Livestock was present in the ceremony as a special guest. Mr. Ajay Kumar Roy, Director General, Department of Livestock Services, Mr. Md. Ali Noor, Joint Secretary, Ministry of Fishers & Livestock and Mr. Shamsul Arefin Khaled, President, WPSA-BB also was present in the ceremony as Guest of Honor.

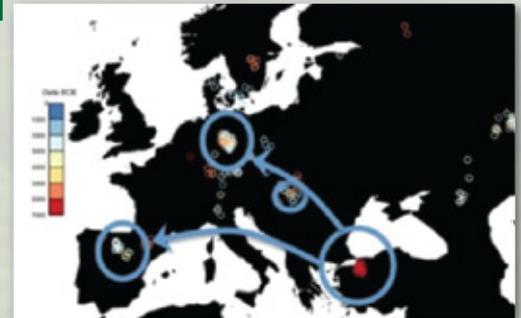


How Farming Changed the Human Genome

The introduction of agriculture into Europe about 8,500 years ago changed the way people lived right down to their DNA. Until recently, scientists could try to understand the way humans adapted genetically to changes that occurred thousands of years ago only by looking at DNA variation in today's populations. But our modern genomes contain mere echoes of the past that can't be connected to specific events. Now, an international team reports in *Nature* that researchers can see how natural selection happened by analyzing ancient human DNA.

"It allows us to put a time and date on selection and to directly associate selection with specific environmental changes, in this case the development of agriculture and the expansion of the first farmers into Europe," said Iain Mathieson, a research fellow in genetics at Harvard Medical School and first author of the study. By taking advantage of better DNA extraction techniques and amassing what is to date the largest collection of genome-wide datasets from ancient human remains, the team was able to identify specific genes that changed during and after the transition from hunting and gathering to farming.

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)



Ancient DNA can provide insight into when humans acquired the adaptations seen in our genomes today.

Photo Credit: Harvard Medical School

Scientists Sequence Resurrection Grass Genome

Nature reports the virtually complete genome of *Oropetium thomaeum*, which is known as the resurrection grass because of its ability to regrow after extreme drought when water becomes available. The sequencing was made possible by Donald Danforth Plant Science Center researchers and Pacific Biosciences' grant program, "Most Interesting Genome in the World." The resurrection grass has 245 Mb genome, grows on rock outcrops in Africa and India, and is closely related to major food, feed, and bioenergy crops. The genome sequence will help researchers understand the novel drought tolerance mechanisms for efficient and productive agricultural land use.

(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)



(a) Well-watered, (b) After 9 days of drought stress, (c) 24h post-hydration. (Photo source: Nature)

Trees with Enhanced Resistance to Greening

After a decade of battling the highly destructive citrus greening bacterium, researchers with the University of Florida's Institute of Food and Agricultural Sciences have developed genetically modified citrus trees that show enhanced resistance to greening, and have the potential to resist canker and black spot, as well. However, the commercial availability of those trees is still several years away. Jude Grosser, a professor of plant cell genetics at UF's Institute of Food and Agricultural Sciences Citrus Research and Education Center, and Manjul Dutt, a research assistant scientist at the CREC, used a gene isolated from the *Arabidopsis* plant, a member of the mustard family, to create the new trees. Their experiment resulted in trees that exhibited enhanced resistance to greening, reduced disease severity and even several trees that remained disease-free after 36 months of planting in a field with a high number of diseased trees. The journal *PLOS ONE* recently published a paper on their study.

"Citrus crop improvement using conventional breeding methods is difficult and time consuming due to the long juvenile phase in citrus, which can vary from four to twelve years," Grosser said. "Improvement of citrus through genetic engineering remains the fastest method for improvement of existing citrus cultivars and has been a key component in the University of Florida's genetic improvement strategy."

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)



This is an orange affected by the citrus greening bacterium, which causes citrus to become misshapen and retain its immature, green color.

Photo Credit: UF/IFAS

Pineapple Genome Unlocked; Gives Insight into Photosynthesis in Drought Tolerant Plants

Pineapple has been cultivated for more than 6,000 years, thriving in water-starved environments. To understand how pineapples grow to be juicy under such conditions, researchers at the University of Illinois at Urbana-Champaign took a closer look at the plant's genes and genetic pathways. The researchers, led by biology professor Ray Ming, found that pineapple share ancestors with sorghum and rice. Like many plants, the ancestors of pineapple experienced multiple doublings of their genomes, so the researchers tracked the remnants of these "whole-genome duplications" to trace the plant's evolutionary history.

The team found that pineapple uses a special type of photosynthesis called crassulacean acid metabolism (CAM), while most plants use C3 photosynthesis. Ming said that CAM plants use only 20 percent of the water used by typical C3 plants, and CAM plants can grow in dry, marginal lands that are unsuited for most plants. The genome revealed that some genes that contribute to CAM photosynthesis are regulated by the plant's circadian clock genes, which allow plants to differentiate day and night and adjust their metabolism accordingly. "This is the first time scientists have found a link between regulatory elements of CAM photosynthesis genes and circadian clock regulation," Ming said.

(Source: Crop Biotech Update, International Service for Acquisition of Agri-Biotech Applications. www.isaaa.org)



Study shows how crop prices, climate variables affect yield, acreage

When corn prices increase farmers reap higher yields by making changes. According to a recent University of Illinois study, about one-third of the yield increase derives from more intensive management practices and two-thirds from cropping additional acreage. Agricultural economist Madhu Khanna says the findings dampen the ongoing debate about the food price and land use changes due to corn ethanol.

"There has been a lot of controversy about the impact of biofuel production and corn ethanol production on corn prices because it affects the estimates of the indirect land-use change caused by corn ethanol," Khanna said. "This in turn affects the carbon-intensity calculations for corn ethanol used to estimate how corn ethanol can comply with the Low-Carbon Fuel Standard in California which seeks to reduce the greenhouse gas intensity of transportation fuel in California by 10 percent by 2020. From this research, knowing that corn yields are responsive to corn prices lowers the magnitude of land-use change related to carbon-intensity of corn ethanol." The study drew from 30 years of data (1977 to 2007) from the National Agricultural Statistical Service (NASS) of the USDA on county-level corn and soybean yield and acreage in the rain-fed region of the United States--east of the Great Plains. The study also looked at climate variables, both for the 30-year period and in predictions for what temperature and precipitation will be in the years 2040 to 2050 and in the longer range to 2080.

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)



These are ears of corn on the University of Illinois south farms.

Photo Credit: U of I: Debra Levey Larson

New era of boutique chocolate

A team of Belgian researchers has shown that the yeasts used to ferment cocoa during chocolate production can modify the aroma of the resulting chocolate. "This makes it possible to create a whole range of boutique chocolates to match everyone's favorite flavor, similar to wines, tea, and coffee," says Jan Steensels, a postdoctoral researcher at the University of Leuven, and the Flanders Institute for Biotechnology, Belgium. The research is published November 20 in *Applied and Environmental Microbiology*, a publication of the American Society for Microbiology. Initially, the researchers sought robust yeast strains that could outcompete the many invading yeast strains that flood the cocoa beans during fermentation. "After harvesting, the cocoa beans are collected in large plastic boxes, or even piled in large heaps on the soil, right in the farms where they are grown," explained Esther Meersman, a postdoctoral researcher with Steensels at the two institutions. The beans are surrounded by a gooey pulp, which is fermented by yeasts and bacteria. Any species in the environment can get into the mix, leaving little control over the ultimate flavor. But by outcompeting other microbes, robust yeast strains could prevent such infelicitous variability in taste, she said. But the investigators noted striking differences in aroma among the chocolates made from fermentations using different robust yeasts, said Steensels. That was remarkable, he said, since only the yeast strains were different: the fermentations were performed identically, and the same recipe was used each time.

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)



Farmers Had Beehives 8,500 Years Ago

Humans have been exploiting bees as far back as the Stone Age, according to new research from the University of Bristol published in *Nature* on 11 November 2015. Previous evidence from prehistoric rock art is inferred to show honey hunters and Pharaonic Egyptian murals show early scenes of beekeeping. However, the close association between early farmers and the honeybee remained uncertain. This study has gathered together evidence for the presence of beeswax in the pottery vessels of the first farmers of Europe by investigating chemical components trapped in the clay fabric of more than 6,000 potsherds from over 150 Old World archaeological sites. The distinctive chemical 'fingerprint' of beeswax was detected at multiple Neolithic sites across Europe indicating just how widespread the association between humans and honeybees was in prehistoric times. For example, beeswax was detected in cooking pots from an archaeological site in Turkey, dating to the seventh millennium BC -- the oldest evidence yet for the use of bee products by Neolithic farmers.

The paper brings together over 20 years of research carried out at Bristol's Organic Geochemistry Unit (School of Chemistry) led by Professor Richard Evershed. Co-authors of the paper include archaeologists involved in the large scale investigation of sites across Europe, the Near East and Northern Africa. DrMélanieRoffet-Salque, lead author of the paper, said: "The most obvious reason for exploiting the honeybee would be for honey, as this would have been a rare sweetener for prehistoric people. However, beeswax could have been used in its own right for various technological, ritual, cosmetic and medicinal purposes, for example, to waterproof porous ceramic vessels."

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)



Working bees

Photo Credit: gertrudda / Fotolia

New project aims to develop advanced tools and research strategies for parasite control in European farmed fish

ParaFishControl is a new €8.1 million EU Horizon 2020-funded research project that aims to improve our understanding of fish-parasite interactions and develop innovative solutions and tools to prevent, control and mitigate harmful parasites which affect the main fish species farmed in Europe (Atlantic salmon, rainbow trout, common carp, turbot, European sea bass, and gilthead sea bream).

Aquaculture is the fastest growing food producing sector worldwide, currently providing half of all fish for human food. Fish disease prevention and management are essential for the sustainability of the aquaculture industry. ParaFishControl aims to improve the productivity, economic performance and image of European aquaculture through improved biosecurity, health and welfare of farmed fish. DrAriadnaSitjà-Bobadilla, ParaFishControl project coordinator, explains: "This project is very timely, as parasitic diseases constitute a key constraint for sustainable finfish aquaculture in Europe. Parasites and related infections are increasingly responsible for severe damages in farmed fish, which significantly reduces aquaculture production and economy."

(Source: Agriculture and Food News, ScienceDaily. www.sciencedaily.com)





Believe it or not!



Wool is a natural fiber grown from **sheep**

Honey bees must tap two million flowers to make one pound of honey.

Bananas are most likely the first fruit ever to be grown on a farm.

An acre of **trees** can remove about 13 tons of dust and gases every year from the surrounding environment.

Cheese was first made over 4,000 years ago in Asia.



Calorie Chart

Fresh Fruits		
Food Type	Quantity	Calories (Kcals.)
Cow Milk	1 Cup	157
Beef	Approx 42 g	142
Full cook boiled eggs	One, big	79
Lamb shoulder, cooked with fat	63 g	220
Chicken leg (hip), with skin, grilled	85 g	223

Source: <http://www.moh.gov.sa>

Agro Tips

If you are planning to use Boron Fertilizer for farming you may like to know a few things. This type of fertilizers provides necessary Boron for the crops. They help to grow & give bigger shape to fruits. You may apply 2-3 kg fertilizer per acre which may vary slightly based on type of soil & crops produced. You can apply it to the soil while preparing for farming or in between the growth phase of crops.

Sharing is caring!

Have you ever seen an artificially made vertical evergreen forest? Stefano Boeri, an Italian architect with an affinity for innovative green structures, is set to build an 117m-tall (384ft) apartment tower in Lausanne, Switzerland, that will be the first building in the world to be covered in evergreen trees.

The 36-story green tower, aptly named "La Tour des Cedres" (The Tower of Cedars), will be home to more than 100 trees, 6,000 shrubs and 18,000 plants spread over roughly 3,000 square meters of green space. The plants will protect the apartments inside from harsh winds, dust, and noise pollution, and will offer a more pleasant view of the city.

This tower will be the second project of its kind by Boeri. He previously designed two 112m towers in Milan as well. (Source: boredpanda.com)



ACI Agribusinesses

ACI Centre
245 Tejgaon Industrial Area
Tejgaon, Dhaka, Bangladesh
Phone: + 88 02 887-8603
E-mail: biolife@aci-bd.com
sectoedab@aci-bd.com

www.aciagribusinesses.com



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