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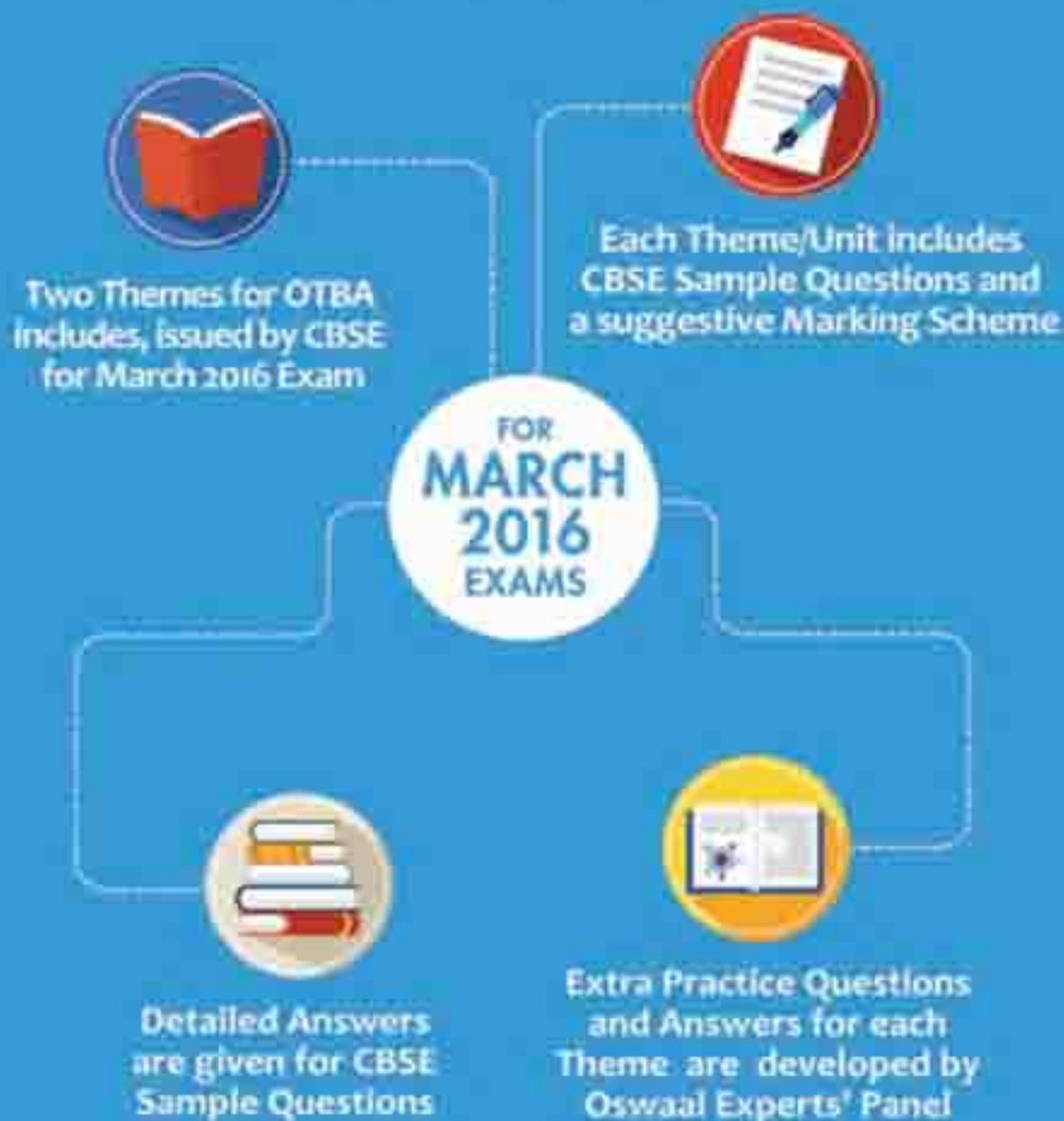
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QUESTION BANK

OPEN TEXT BASED ASSESSMENT

OTBA BIOLOGY

CLASS 11



Strictly Based on the Latest Syllabus issued by CBSE Board for 2016 Examination

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Open Text Based Assessment

OTBA BIOLOGY

Class XI

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PREFACE

CBSE's curriculum making methodology is based on National Curriculum Framework-2005. As per which, CBSE continuously tries to come up with new ideas for improvement in curriculum. As a part of upgrading the curriculum, CBSE has introduced Open Text Material Assessment (OTBA) for use as a part of March examination for class XI

According to CBSE, the concept of an Open Text-Based Assessment is meant to test the student's skills pertaining to information processing, comprehension, analysis and inference.

As per the Circular No. Acad-77/2015 dated November 23, 2015, the CBSE has revealed 20% questions in the examination will be asked from the Themes provided by the Board for the Units mentioned in the syllabus. The main objective of introducing this element is to provide opportunities to students to apply theoretical concepts to a real-life scenario mentioned in the themes. This would also encourage active group learning in the class.

We at Oswaal Books, always try to keep pace with the dynamic approach of the CBSE. Hence, our latest offering is **OTBA Question Banks with Solutions** for 3 subjects specified by the Board- Economics, Geography & Biology. Each Question Bank is a comprehensive collection of questions from the prescribed Themes issued by CBSE. All the Questions have been developed by our Expert Authors' Panel, where each and every concept has been researched properly and the questions have been framed accordingly.

We are sure that this book will serve as a perfect teaching guide for the teachers and the students alike. It is expected that they will take full advantage of our knowledge and experience and sail through the final term examinations with ease.

Although enough care has been taken to make this book error free. We highly appreciate feedbacks and suggestions from our readers which will help us in improving this book.

We wish you all Happy Learning

—Publisher



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(An Autonomous Organization under the Union Ministry of Human Resource Development, Govt. of India)
"Shiksha Sadan", 17, Institutional Area, Rouse Avenue, New Delhi-11002.

CBSE/ACAD./ Addl Dir (I &R) /OTBA /2015

23rd November, 2015

Circular No : Acad-77/2015

To

All the Heads of Institutions affiliated to CBSE.

Subject : Availability of text material for Open Text Based Assessment (OTBA) for classes IX & XI, 2016

The Central Board of Secondary Education recommends that multiple modes of assessment need to be provided to cater to the varied abilities of individual strengths of learners. Accordingly, an element of Open Text Based Assessment for classes IX and XI was introduced by the Board in 2014 Examination. These are meant to incorporate analytical and theoretical skills, thus moving away from memorization. The following open text materials for Classes IX and XI are being provided for the Examination in 2016 as per the curriculum issued.

Class XI

Sr. No.	Subject (Code)	Specified Units	Themes for OTBA	Marks Distribution for one Theme
1.	Geography (029)	Unit-5 Water (Oceans) (Hydrosphere)	1. The Dynamic Ocean Current 2. Ocean Resources	5 + 5 = 10
2.	Biology (044)	Unit-V Human Physiology-(A)	1. Take care 2. The Ambient Air	5 + 5 = 10
3.	Economics (030)	Unit 6 : Development Experience of India	1. Special Economic Zones 2. Indo- Pak trade relations	5 + 5 = 10

You may provide the contents to the students and teachers and encourage them for meaningful curricular transactions using OTBA. The detailed guidelines to teachers and frequently asked questions are enclosed for reference.

For any clarifications you may please contact Shri. Pramod Kumar T.K, A.P and J.D on 011-23211574 or on email : pramodkumartk.cbse@gmail.com

Yours sincerely,

Sugandh Sharma.

(Sugandh Sharma)

Addl. Director (Research & Innovation)

Encl :

Annexure 1 : Guidelines to teachers for Open Text Based Assessment

Annexure 2 : Frequently asked Questions

Annexure 3 : Open Text Material for Class IX, 2016

Annexure 4 : Open Text Material for Class XI, 2016

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(Sugandh Sharma)

Addl. Director (Research & Innovation)



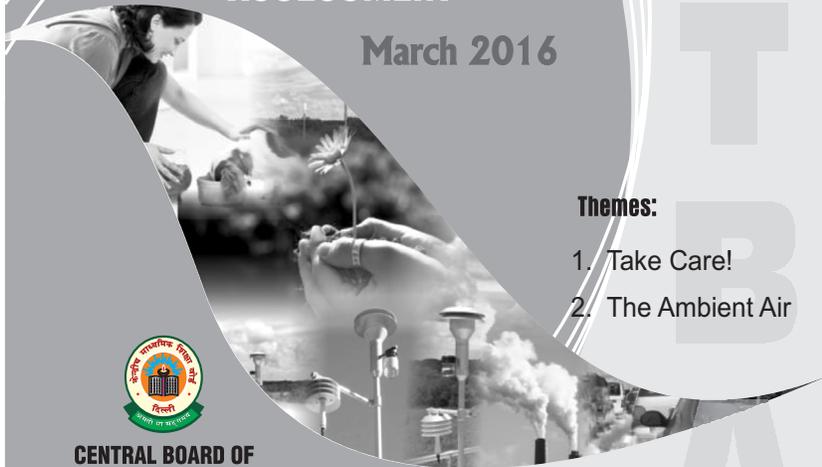
Biology

Class-XI



OPEN TEXT-BASED ASSESSMENT

March 2016



Themes:

1. Take Care!
2. The Ambient Air



**CENTRAL BOARD OF
SECONDARY EDUCATION**

Shiksha Kendra, 2, Community Centre,
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Biology

Code (044)

1. Theme – *Take Care!*

Abstract

Living beings are blessed with the body systems which work in perfect and automated coordination in such a manner that one system cannot work in complete isolation with the other organ systems. They all are integrated, due to which if some changes are taking place in one system, other systems get affected equally. There is a biological phenomenon behind every human feeling and emotion, and action and reaction out of that. After being aware of relation between changes in the outside environment and inside the body, to keep the body balanced and to stay fit; you need to take good care of yourself.

We all talk of “gut feelings,” and we will really appreciate the amazing connections between our brain and digestive system. Stomach and intestines actually carry more nerve cells than the spinal cord, which leads some of the experts to consider the digestive system as “mini brain.” A highway of nerves runs directly from our brain to digestive system, and maintains a continuous flow in two directions. It means 95% of the body’s serotonin, a hormone that helps in controlling moods, is found in the digestive system, and not in the brain.

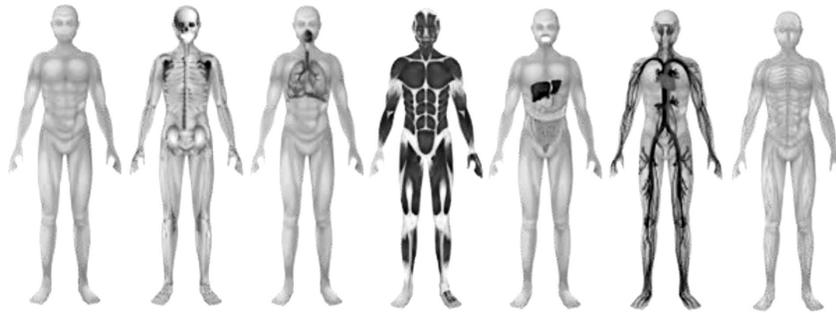
You need not to do a PhD in Physiology to acknowledge that stress can be hard on the stomach. We all have done our own experiments on the subject, intentionally or not. Try to remember how you felt last time when you spoke in public? Those butterflies weren’t in your head.

The impact of stress on the stomach reaches far beyond indigestion. However, in recent years, doctors have revealed a remarkably complex connection between brain and digestive system. The whole system is extremely sensitive to our moods. In fact, experts now see stress as a

major participant in a wide range of digestive problems, including irritable bowel syndrome, heartburn and indigestion.

People with digestive inconveniences often scoff at the idea that stress can be at the root of their problems. To them, it sounds like “blaming the victim.”

But experts who do research about the link between stress and digestion are not searching for people to blame them. Instead, they are looking for scientific explanations for some of life’s most frequent maladies. By understanding how stress affects our bodies, they are opening new avenues for treatment and prevention of many conditions.



Observe! Appreciate! Unity in Diversity

Listen to your gut.....

Sensing something, without the information and drawing conclusions, is a part of human nature. A gut feeling about the weather, someone’s state of mind or even a decision to buy a car, our ‘intuition’ is a constant factor in our decision making.



There are many ways to describe ‘Tacit Knowledge’ (Schon described it as “usable but difficult to express”). In healthcare the term gut feeling

is used extensively; almost every day we listen to someone saying, “I wasn’t sure why I did this - it was just a ‘gut feeling’”. Given that, the cognitive theory behind intuition and decision making has been well researched, it is interesting that the term ‘gut feeling’ itself has been relatively poorly explored in medicine.

Gut feeling has inherent anecdotal appeal because of its face validity. We have all experienced a gut feeling about something so it makes sense that it is real ‘thing’ in the clinical world.

When we are able to communicate from the inside out, we are in conversation directly to that part of the brain that controls behaviour, and then we let people to rationalize it with the tangible things we do and say. This is where our gut decisions come from.

—**Simen Sinek**

There are strong reasons why should pay such a close attention to our brains and digestive system. During stroke of stress, our bodies are designed to keep those things on focus that can help us stay alive. When the brain feels intensely stressed, it unleashes a cascade of hormones that can put the entire digestive system into an uproar. The hormones have different and sometimes contradictory duties. For example, the hormone CRH (Corticotropin-releasing hormone) is one of the body’s main alarm bells. In stressful situations, the brain pumps out CRH to tell the adrenal gland to start making steroids and adrenaline chemicals that can give strength and energy to run or fight the way out of trouble.

CRH also turns off appetite, which explains why some people cannot eat anything when they are stressed. At the same time, the steroids triggered by CRH can make a person hungry, which is why some people fight stress with ice cream, chocolate, or potato chips.

Different people have different responses to stress, and there is no way to surely say how specific situations will affect digestion. But there are some general thumb rules. Over the short term, stress can cause stomach aches, nausea, and diarrhoea. In the long term, prolonged stress can aggravate chronic diseases such as irritable bowel syndrome and heartburn.



The classic example of a functional GI disorder is Irritable Bowel Syndrome (IBS), a very common and perplexing malady often characterized by painful cramps, bloating, and constipation alternating with diarrhoea.

Nobody knows how IBS gets its start, but there is no doubt that stress can worsen the symptoms. Stress can make the colon contract, leading to stomach pain. It is not completely clear why people with IBS sometimes become constipated. One possibility is that stress can occasionally make the contractions uncoordinated and non-productive. Stress can also make the mind more aware of sensations in the colon, and since people with IBS may feel more discomfort due to extra-sensitive pain receptors in the gastrointestinal tract, even normal contractions can feel really unpleasant.

IBS can flare up over everyday annoyances, especially those that make a person feel tensed, angry, or overwhelmed. But as reported in a 2004 issue of *Psychosomatic Medicine*, IBS, like other chronic conditions, is even more sensitive to the stress that comes from major life changes, such as diagnosis with a dangerous disease or a loss of job.

Ulcerative colitis and Crohn's disease are the conditions known together as Inflammatory Bowel Diseases (IBD). These are definitely not caused by stress, but once these diseases take hold, a bout of stress can worsen their symptoms.

How are you????

If your digestive system is not running smoothly, do not suffer in silence. According to a report from the University of North Carolina, as

many as 80 percent of people with IBS or any other functional gastrointestinal problems never discuss their symptoms with a doctor. That's unfortunate, because doctors can often prescribe medications to get the digestive system back on track. A doctor can also check for underlying diseases that might explain the symptoms.



If your doctor cannot find a physical explanation for your digestive troubles, you may need to calm your mind before you calm your stomach. Ask your doctor if you would be a good candidate for cognitive behavioural therapy, interpersonal therapy, relaxation therapy, or another form of counselling. You can do your part to battle adverse situation outside by eating well, exercising regularly, and getting plenty of sleep.

Digestive problems might be a message. That message is “Live well and learn to relax.” This is the time when you definitely would like to listen to your gut.

The emerging and surprising view of how the enteric nervous system in our bellies goes far beyond just processing the food we eat.

In Olympics, even the steeliest players are likely to experience that familiar feeling of “butterflies” in the stomach. This sensation, which is because of an often-overlooked network of neurons lining gut, is so extensive that some scientists have nick-named it as our “second brain”. Although its influence is far-reaching, the second brain is not the seat of any conscious thoughts or decision-making.

“The second brain does not help with the great thought processes ... religion, philosophy and poetry is left to the brain in the head,” says Michael Gershon, Chairman of the Department of Anatomy and Cell

Biology at New York-Presbyterian Hospital/Columbia University Medical Center, an expert in the nascent field of neurogastroenterology. Technically known as the enteric nervous system, our second brain consists of sheaths of neurons embedded in the walls of the long tube of our gut, or alimentary canal, which measures about nine meters end to end from the oesophagus to the anus. The second brain contains some 100 million neurons, more than in either the spinal cord or the peripheral nervous system, Gershon says.

This multitude of neurons in the enteric nervous system enables us to “feel” the inner world of our gut and its contents. Much of this neural firepower comes to bear in the elaborate daily grind of digestion. Breaking down food, absorbing nutrients, and expelling of waste require chemical processing, mechanical mixing and rhythmic muscle contractions that move everything on down the line.

Thus, equipped with its own reflexes and senses, the second brain can control gut behaviour independent of the brain. We evolved this intricate web of nerves to perform digestion and excretion “on site,” rather than remotely from our brains through the middleman- spinal cord. “The brain in the head does not need to get its hands dirty with the messy business of digestion, which is delegated to the brain in the gut,” Gershon says. He and other researchers explain, however, that the complexity of second brain cannot be interpreted through this process alone.

The second brain informs our state of mind in other more obscure ways as well. A big part of our emotions are probably influenced by the nerves in our gut.

Butterflies in the stomach – signaling in the gut as part of our physiological stress response is one such example. Gastrointestinal (GI) turmoil can sour moods..... emotional well-being may rely on messages from the brain below to the brain above...

Given that the commonalities of the two brains, other depression treatments that target the mind can unintentionally impact the gut. The enteric nervous system uses more than 30 neurotransmitters, just like the brain, and in fact 95 percent of the body’s serotonin is found in the bowels. Because antidepressant medications called selective

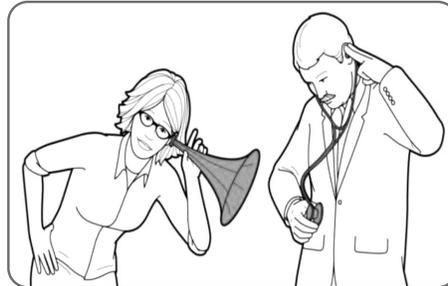
serotonin reuptake inhibitors (SSRIs) increase serotonin levels, it is little wonder that medications meant to cause chemical changes in the mind often provoke GI issues as a side effect.

Serotonin seeping from the second brain might even play some part in autism, the developmental disorder often first noticed in early childhood. It has been discovered that the same genes involved in synapse formation between neurons in the brain are involved in the alimentary synapse formation. If these genes are affected in autism, it could explain why so many kids with autism have GI motor abnormalities in addition to elevated levels of serotonin in their blood.

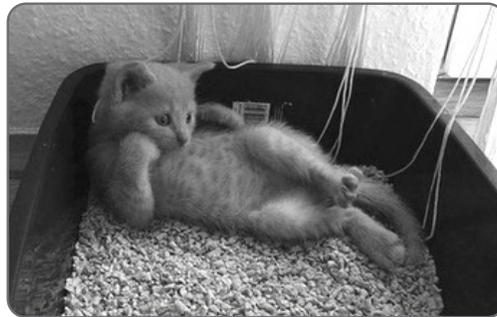
So for those who are physically skilled and mentally strong enough to compete in the Olympic Games as well as those watching at home, it is necessary for us all to pay more heed to our so-called “gut feelings” in the future.

May I help you !!!!

Yoga and Cognitive Behavioural Therapy (CBT)



Imagine yourself walking through a relaxing rain forest, exotic wildlife all around you, with nothing but the sweet sound of a waterfall besides. This sort of imagery is actually a treatment for a problem that plagues 1 in every 5 people. Disorders of the digestive system have long been an uncomfortable problem for many people. Until now, there have been few treatments that did not involve the use of medications, side effects of which were often worse than the symptoms. This is where visual therapies such as Meditation and Cognitive Behavioural Therapy (CBT) come in. New research shows that Meditation therapy and CBT are becoming more and more effective in treating many different disorders of the digestive system.



Stressed??? Relax! its a healthy choice.

The digestive system includes everything within the digestive tract. It is associated with all organs that are involved with the breaking down and digestion of food. Organs within the system include the stomach, liver, large and small intestines, mouth, oesophagus, etc. Digestive system disorders are diseases that obstruct the normal functions of these organs. Such disorders often include Crohn's disease, Irritable Bowel Syndrome (IBS), acid reflux disease, etc.

It is estimated that 80% of our well-being is dependent upon how our stomach feels. Many times, when people get stressed or nervous, conditions that are purely mental, they complain of stomach pain or abdominal discomfort.

Turning to Meditation and CBT should not always be a last resort, but often times, it seems so. CBT, like Meditation, teaches relaxation techniques, and also includes certain characteristics of helping people better cope with their emotional conditions. 60% of IBS sufferers have reported a history of stress. By learning to control stress and by being

more relaxed with the help of Meditation and CBT, digestive system disorders can not only become less severe but can be treated in much better manner.

On recommendations and supportive justifications of Government of India, world observed 21st June, 2015 as 'International Day of Yoga' to bring awareness about it and to bring it into practice of a common individual, and also to help the people to get be better prepared to deal with the stressful situations today.

Internal Ecology

Science is finding that teeny tiny creatures living in your gut, known as your micro-biome, are there for a definite purpose. About 100 trillion of these cells populate the body, particularly intestines and other parts of digestive system. In fact, 90 percent of the genetic material in your body is not of its own, but rather that of bacteria, fungi and other microorganisms that compose inner microflora.

Some of these bacteria can make living beings sick; for example, the National Institute of Allergy and Infectious Diseases (NIAID) at Bethesda recently found that Crohn's Disease may be caused by immune responses to certain gut microbiota. But the majority are good, and they work together as helpmates to aid to digestive system and keep humans well. Beneficial bacteria, better known as probiotics, are so crucial to the health that researchers have compared them to "a newly recognized organ."

One of the major results of eating a healthy diet is that by doing so, humans cause beneficial gut bacteria to flourish, and they secondarily perform the real "magic" of restoring the health.

Remember, an estimated 80 percent of immune system is located in gut, which is just one more reason why "tending to" gut microflora is an essential element of good health. A robust immune system, supported by flourishing inner ecosystem, is the first defense against all diseases, from the common cold to cancer.

Being physically active may encourage beneficial germs to thrive in your gut, while inactivity could do the reverse.

[According to an innovative study done by University College Cork]

In recent years, there has been an explosion of interest in the role that gut microbes play in wholebody health. A multitude of studies have shown that people with large and diverse germ populations in their

digestive tracts tend to be less prone to obesity, immune problems and other health disorders than people with low microbial diversity, and that certain germs, in particular, may contribute to improved metabolic and immune health.

A featured article in *Time Magazine* says :

Draw attention to the possibility that exercise may have a beneficial effect on the microbiota of the gut!!!

“Our surprisingly complex internal ecology has been a hot topic in medicine lately. Initiatives such as the Human Micro-biome Project, an extension of the Human Genome Project, have been working tirelessly to probe potential links between the human microbiota and human health, and to construct strategies for manipulating bacteria so that they work with us rather than against us.”

Immunity Versus Breast Milk

This is precisely what Dr. Natasha Campbell-McBride’s work centers around, and Gut and Psychology Syndrome (GAPS) nutritional plan is designed to reestablish proper gut flora in order to heal and seal your gut- thereby reversing and eliminating ailments running the gamut from autism, learning disorders, and Obsessive-Compulsive Disorder (OCD), just to name a few possibilities. It is exciting to see that science is starting to take this more seriously, as autism has reached epidemic proportions.

‘Until a little while ago it was outlandish to suggest that microbiomes in the gut could be behind this disease,’ University of Guelph Assistant Professor of Biology Emma Allen-Vercoe said. ‘But I think it is an intersection between the genetics of the patient and the micro-biome and their environment.’

According to the National Institute of Allergy and Infectious Diseases; presence of T cells in the gut mount is an immune response to commensal bacteria [normal microflora] during an infection. They also are the first to show that commensal-specific T cells remain in circulation after the infection is cleared.

Based on their observations, the investigators speculate that, when uncontrolled, commensalspecific T- cells may contribute to development of Crohn’s disease, but more research is needed.

Adding more weight to Dr. Natasha Campbell-McBride's insistence that breastfeeding is crucial to help normalize an infant's microflora (hence protecting against disease and developmental problems), a first-of-its-kind study on human breast milk and its impact on infants' gut flora gives new insight on why breast milk is better than formula at protecting newborns from infectious illness.

The study's author, William Parker, Ph.D, Associate Professor of Surgery at Duke explained that breast milk appears to promote a healthy colonization of beneficial bio-films. Previous research has already established that breast milk reduces diarrhoea, flu, and respiratory infections in infants, as well as lowers their risk of developing allergies, Type 1 diabetes, multiple sclerosis and other diseases.

The researchers grew bacteria in samples of three popular brands each of milk- and soy-based infant formulae, cow's milk, and breast milk. All samples were incubated with two strains of beneficial *E.coli* bacteria (while some *E.coli* cause violent disease, other 'friendly cousins' actually serve helpful roles). While the bacteria rapidly multiplied in all the specimens, there was one major difference; in the breast milk specimens, the bacteria formed bio-films, whereas the bacteria in the whole milk and the different infant formulae grew as individual organisms and failed to form into a bio-film.

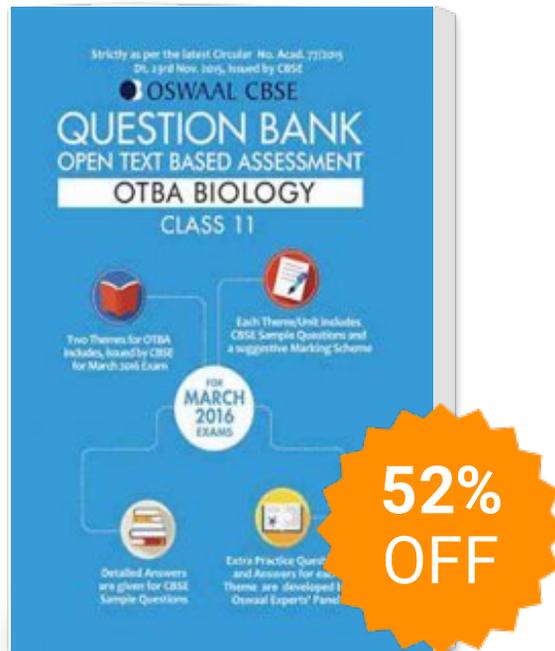
This is indeed important. Bio-films are essentially thin, sticky bacterial "sheaths" that adhere to intestinal wall, where they serve as a shield, effectively blocking out pathogens and infectious agents. This is an essential part of the "healing and sealing" of your gut that Dr. Campbell-McBride's GAPS protocol accomplishes.

It is easy to get a much wider variety of beneficial bacteria in natural food than could ever be obtained from a supplement.

Genes

Two concurrent avenues of high-powered research are supported by the Crohn's and Colitis Foundation of America (C.C.F.A.). One is the C.C.F.A. Genetics Initiative, in which scientists are exploring more

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