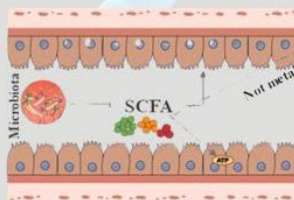




October | Powerful Prebiotics & Beer

**Brewer's spent yeast improves human gut microbiota and ameliorates clinical blood parameters: A randomized, double-blind, placebo-controlled trial**

Horn, Zeni, Herkenhoff, Curbani, Gonçalves, Rutkoski, Israel, Alves de Almeida



## Explore the Science Behind Beer's Hidden Health Benefits

In the spirit of Oktoberfest, we're highlighting study by Horn et al. that celebrates one of beer's hidden treasures—Brewer's spent yeast (BSY). Typically a byproduct of the brewing process, this leftover yeast is packed with nutrients that offer significant health benefits.

This study was a randomized, double-blind, placebo-controlled trial examining the effects of BSY on gut health and blood markers in humans. Over four weeks, participants who took BSY capsules saw improvements in their gut microbiota, including an increase in beneficial bacteria like *Lactobacillus*. These participants also experienced higher levels of short-chain fatty acids (SCFAs), such as butyric and acetic acids, which play a key role in reducing inflammation and supporting digestive health.

BSY also helped reduce total cholesterol levels and improved liver function, without any negative side effects. This study suggests that the yeast leftover from beer brewing could be a powerful prebiotic, supporting a healthier gut and overall metabolic health. So, as we raise our steins this Oktoberfest, let's toast to beer's lesser-known gift to wellness—Brewer's spent yeast! Prost!

The Implen NanoPhotometer® N60 was used to determine the concentration and purity quality of extracted DNA.

[Learn more](#)



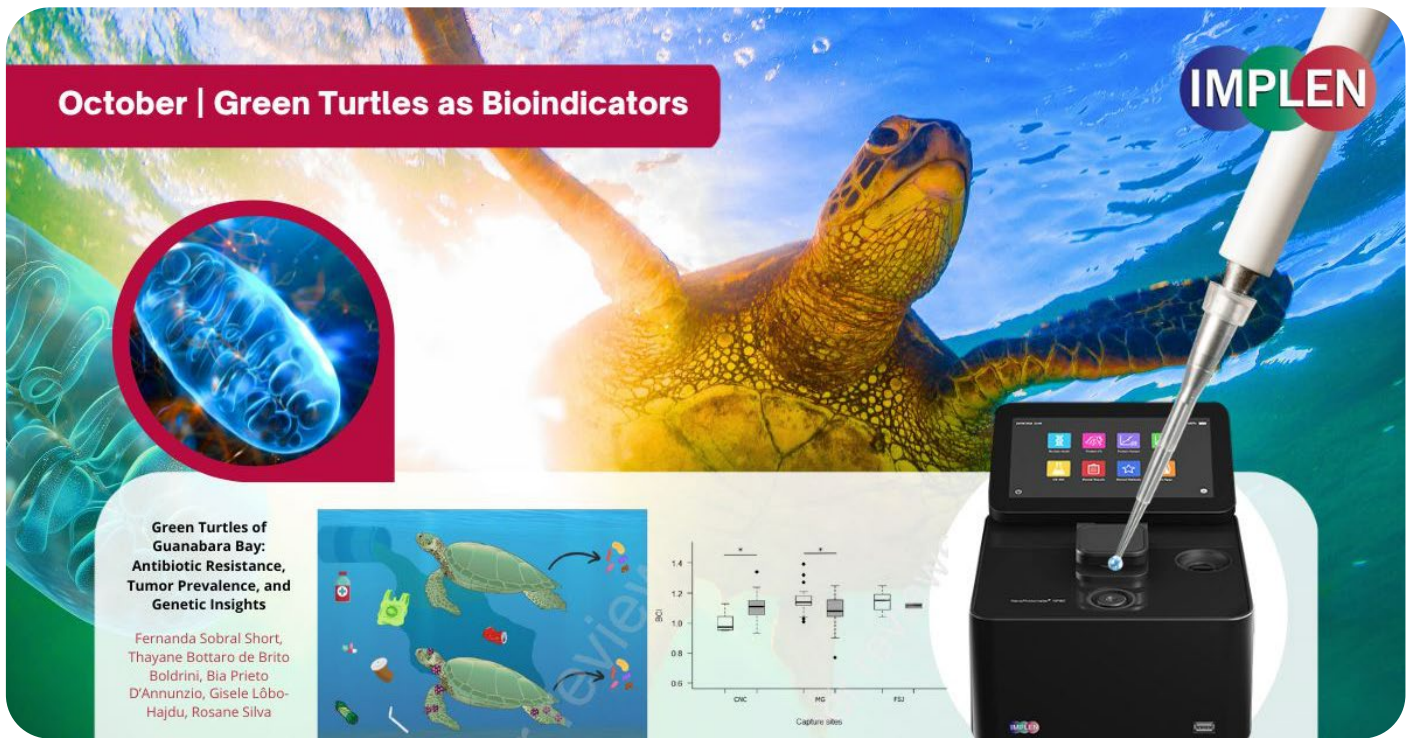
## Exploring the Depths: New Discoveries on Caribbean Sea Fan Health

As we get ready for vacation season, this week's Implen NanoPhotometer Journal Club is taking us to the beautiful Caribbean. While many of us think of crystal-clear waters and vibrant coral reefs, there's more to explore beneath the surface. A recent study by Becker et al. has uncovered fascinating insights into the health of Caribbean sea fans, a type of soft coral that adds to the region's underwater beauty.

Traditionally, sea fan lesions were blamed on a single fungus, *Aspergillus sydowii*, but this study shows the picture is much broader. By combining advanced diagnostic methods including microscopy, culture, and DNA testing, the researchers found that other microorganisms, such as algae and bacteria, often play a role in these lesions. This means that what we see as coral disease may actually be caused by a variety of opportunistic infections.

This research is not just about diagnosing coral diseases—it's a reminder of the intricate and delicate ecosystems that thrive in the Caribbean. The Implen NanoPhotometer® was used in this work for DNA quantification.

[Learn more](#)



## Coastal Health: What Green Turtles Can Teach Us About Protecting Our Beaches

Continuing with last week's theme of vacation season approaching, this week's Impen NanoPhotometer Journal Club focuses on the environmental health of coastal regions, popular destinations during the holidays. As travel plans to beach locations ramp up, it's important to recognize the impact human activities have on marine ecosystems.

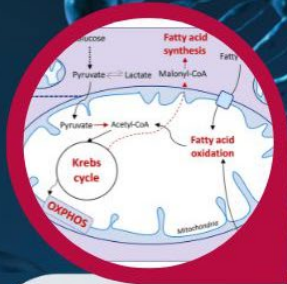
A recent study by Short et. al. on green turtles in Guanabara Bay, Brazil, highlights the consequences of pollution in these areas. The turtles, serving as bioindicators, reflect the deteriorating health of their environment. Researchers examined 107 juvenile turtles, finding that those between 40-65 cm were more prone to fibropapilloma tumors, and turtles from more polluted areas showed lower body condition indices (BCI). The presence of antibiotic-resistant bacteria including *Citrobacter freundii* and *Escherichia coli* further emphasizes the threat pollution poses.

Despite these challenges, the turtles are reaching subadult stages, showcasing their resilience. Genetic analysis also revealed 21 mtDNA haplotypes, including new ones, indicating that the turtles have origins in Africa, the Caribbean, and Brazil. As vacation season kicks off, this serves as a reminder to consider the environmental footprint left behind and the importance of ongoing efforts to protect these ecosystems. The Implen NanoPhotometer® was used in the work for the quantification of extracted DNA.

[Learn more](#)

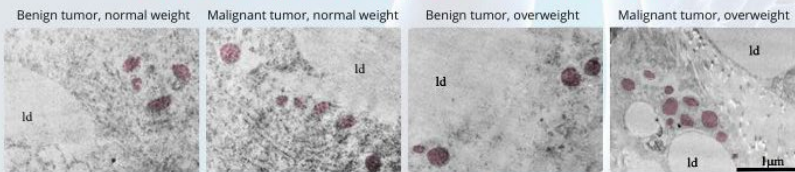
October | Obesity & Breast Cancer

IMPLEN



**Breast Cancer: Mitochondria-Centered Metabolic Alterations in Tumor and Associated Adipose Tissue**

Zakic, Kalezic, Drvendzija, Udicki, Ivkovic Kapici, Srdic Galic, Korac, Jankovic and Korac



## Fueling the Fight: How Fat and Mitochondria Drive Breast Cancer Growth - Spotlight for Breast Cancer Awareness Month

This issue is recognizing October as Breast Cancer Awareness Month by focusing on the latest research in breast cancer metabolism. The study "Breast Cancer: Mitochondria-Centered Metabolic Alterations" by Zakic et. al. explored how breast cancer interacts with the surrounding fat tissue in premenopausal women, with a focus on mitochondria and the role of obesity. By looking at tissue samples from women with benign (non-cancerous) and malignant (cancerous) breast tumors, the researchers found that cancerous tissue processes energy differently than healthy tissue.

Instead of relying on glucose (sugar) for energy, cancer cells seem to use fat from nearby fat cells, especially in obese women. This breakdown of fat and its transfer from fat cells to cancer cells appears to drive cancer growth. The study revealed that the enzymes and proteins responsible for fat metabolism are more active in both cancerous tissue and the surrounding fat tissue in obese women.

Cancer cells and fat cells work together, especially in obese women, to fuel tumor growth. This makes fat metabolism a critical focus for breast cancer treatment, as obesity may speed up the progression of the disease. The study suggests that targeting these metabolic changes could lead to new and effective cancer therapies. The Implen NanoPhotometer® was used in this study to assess DNA purity and concentration.

[Learn more](#)



## Unmasking the Role of Sugar Metabolism and Halloween Genes

This issue highlights the work of Gu et al., revealing the critical connection between sugar metabolism and Halloween genes in silkworm development. These genes are essential for producing ecdysteroids, the hormones that drive molting and metamorphosis in insects.

The study demonstrated how the prothoracicotrophic hormone (PTTH) activated sugar transporters and trehalase enzymes in the prothoracic glands of silkworms. These enzymes broke down trehalose, a sugar, into glucose, which provided the necessary energy for hormone production. When sugar transport and metabolism were blocked, ecdysteroid levels dropped, showing how vital sugar metabolism is for regulating these hormones.

Interestingly, PTTH selectively enhanced the activity of certain sugar metabolism genes without affecting other key genes involved in glycolysis, the process that breaks down glucose to produce energy. This pointed to a specific role for PTTH in stimulating the sugar-related pathways essential for hormone production. By revealing how PTTH influences both Halloween genes and sugar metabolism, this study sheds light on how hormone production is tightly regulated during insect development. Through this exploration, the research offered new insights into the delicate balance between hormone production and metabolism, deepening our understanding of the complex processes that govern insect growth and development.

The Implen NanoPhotometer® was used in this study to measure RNA concentrations.

[Learn more](#)



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