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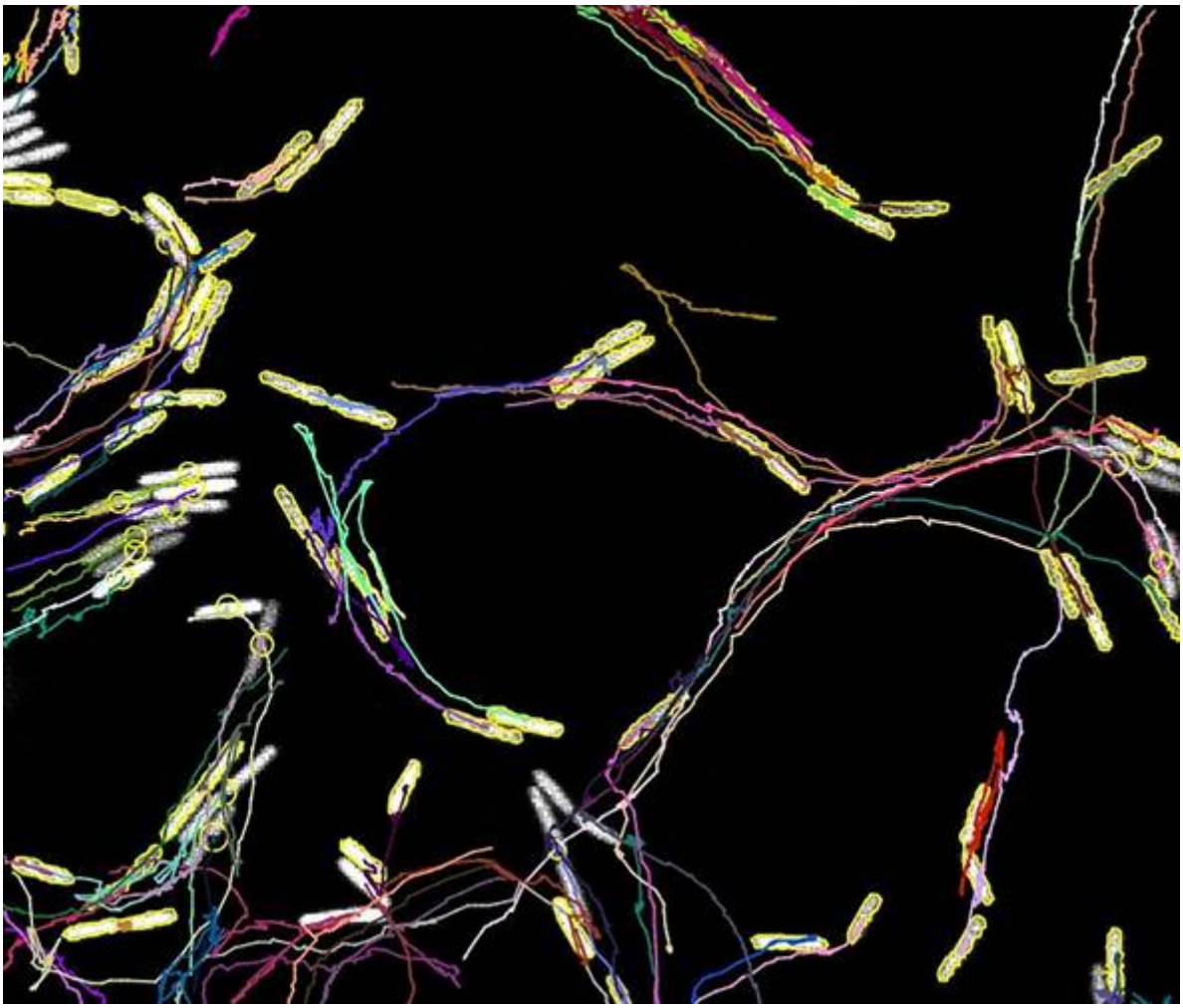

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

EFFECTS OF THE IMMUNOMODULATORY STRAIN Lactobacillus delbrueckii subsp. bulgaricus CRL864 IN A MURINE BREAST CANCER MODEL UNDER CHEMOTHERAPY TREATMENT

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Breast cancer (BC) is one of the most frequently diagnosed cancers worldwide, affecting the lives of thousands of women. While surgical excision of the tumor remains the primary treatment approach, additional therapies are often necessary to target residual tumor cells. Chemotherapy is commonly used in these cases; however, it is not tumor-specific and can adversely affect other rapidly dividing cells, impacting the patient's quality of life. In this context, probiotics have emerged as potential candidates for mitigating the severity of undesirable side effects and for their immune-modulating properties. Our research group previously selected a lactic acid bacterium (LAB), *Lactobacillus* (L.) *delbrueckii* subsp. *bulgaricus* CRL864, for its demonstrated immune-modulatory effects in models of intestinal inflammation and colon cancer. This study aims to assess the impact of administering this LAB in a murine model of breast cancer undergoing chemotherapy with capecitabine (CAP), an oral treatment, or 5-fluorouracile (5-FU), a systemic treatment. For this, BC was induced by injecting a murine breast cancer cell line (4T1) into the upper right mammary gland of 7–8-week-old BALB/c female mice. When tumors reached a diameter of 0.3 ± 0.1 cm, mice were randomly assigned into groups which received different treatments: i) BC control without treatment received saline solution orally; ii) LAB group received the bacterium strain orally in a concentration of 108 CFU/mL throughout the whole experiment; iii) CAP group received a daily oral CAP doses at a concentration of 350 mg/kg during 14 days; iv) 5-FU group received 5-FU intraperitoneal injections at a concentration of 50 mg/kg every each day during 5 days, followed by a 6 day rest period; v) LAB + CAP group received bacterium strain and CAP; LAB + 5-FU group received bacterium strain and 5-FU. Tumor volume and body weight were assessed during the experiment. When the experiment ended, mice were euthanized and samples were collected. Blood cell counts, small intestine histology, and serum cytokines were evaluated. Results showed that LAB administration by itself decreased the tumor growth. When it was administered in mice treated with chemotherapeutics, there was a decrease in side effects without affecting the anti-tumor treatment. Mice that received the selected LAB showed less intestinal inflammation and reduced weight loss. Serum cytokines showed that LAB administration was associated with a modulation of the immune response decreasing the levels of TNF (a pro-inflammatory cytokine). In conclusion, *L. delbrueckii* subsp. bulgaricus CRL864 did not interfere with the cancer

chemotherapeutic treatment, was able to reduce its undesirable side effects and modulated the host immune response. Therefore, this LAB has the potential to be used as an adjuvant for breast cancer patients undergoing a chemotherapy treatment.

Palabras clave: Cancer – Probiotics – Immunomodulatory – Chemotherapy