Bisphenol A (BPA), formerly called 4,4'-dihydroxy-2,2-diphenylpropane, is a commonly used chemical found in re-microwaveable baby bottles and the polycarbonate lining of plastic bottles. BPA is found in normal levels in the environment, mostly as a byproduct of industrial processes. Studies have shown that the levels of BPA found in the environment are non-hazardous to human health. However, research also suggests that BPA could lead to breast cancer since BPA is an endocrine disruptor, meaning it can mimic hormones that have a functional role in the body. Due to these properties it was of interest to determine whether BPA could alter the terminal end buds (TEBs) structures of the mammary gland that are the target of carcinogenesis. For this purpose we have analyzed the effects of prepubertal exposure to BPA on the 50 day old rat's mammary gland.

Nursing rats received, through gavage, 250 µg/kg body weight of BPA, during 21 days, from the delivery to weaning. The female offspring were sacrificed when they reached 50 days of age. Their abdominal mammary glands were extracted and used for whole mount preparation for TEB counting, or cDNA-microarrays gene expression analysis. The results indicated a slight decrease in the number of TEBs in mammary glands of the treated rats when compared to the control group. However, gene expression analysis revealed changes in expression of numerous genes reported in breast cancers, such as Vav2, Nfkb1, Tnsrf11a, Mycn and Rabl3. Notably, some of the genes modulated by BPA have also been found to be deregulated in Inflammatory Breast Cancer.

Terminology:

- **BPA Group**: 250 µg of BPA/kg of body weight
- **Control Group (SO)**: equivalent volume of sesame oil

### Conclusions

- Morphological analysis demonstrated that the mammary glands of rats treated with BPA did not have substantial changes in the number of TEBs compared to the control group.
- In the cDNA microarray analysis, there were several differentially expressed genes in BPA treated rats which may encourage an environment hospitable to the development of breast cancer, such as Vav2, Nfkb1, Tnsrf11a, Mycn and Rabl3.
- Notably, some of the genes modulated by BPA have also been found to be deregulated in Inflammatory Breast Cancer.