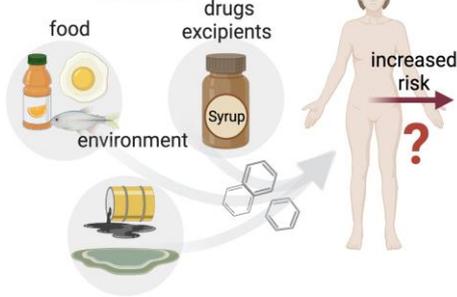
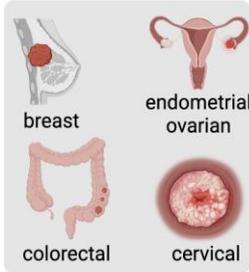


Background

Exposure to paraben molecules



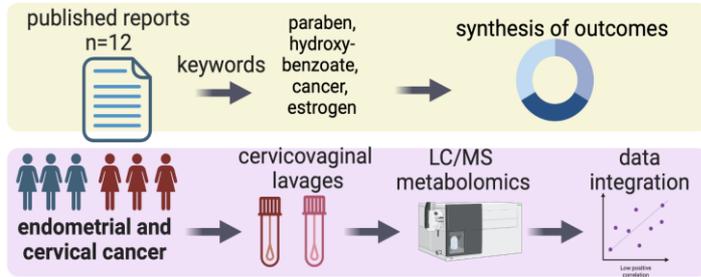
Estrogen-mediated cancers



Research Objectives

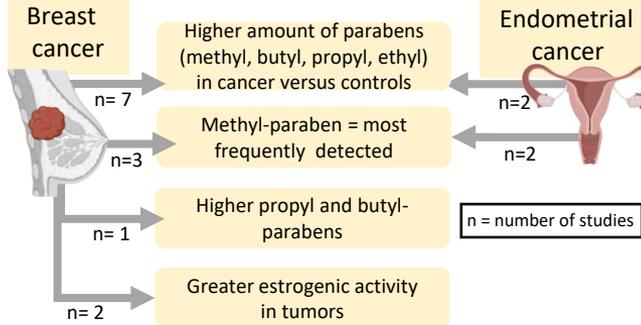
- (i) Evaluate parabens related to carcinogenesis risk in estrogen-driven cancers
- (ii) Identify parabens in the cervicovaginal environment in cervical and endometrial cancer

Approach



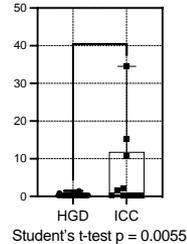
Results

Parabens are widely detected in tumors with more potent estrogenic activity (number of studies, n = 12)



In cervicovaginal lavages, we detected **para-hydroxybenzoate**, **propyl-paraben**, and **methyl-paraben-sulfate** in the cervical cancer cohort.

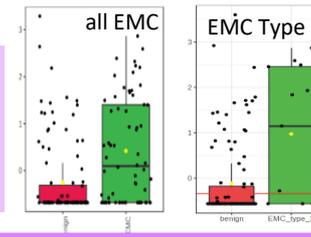
Methyl-paraben sulfate was detected in **27%** of high-grade dysplasia (HGD) patients and **60%** of cervical cancer (ICC) patients.



Methyl-paraben sulfate was significantly enriched in ICC compared to HGD.

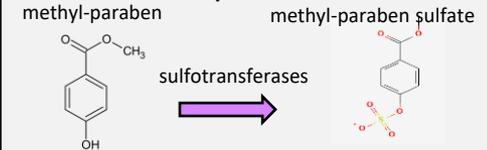
Methyl-paraben sulfate was significantly enriched in endometrial cancer (EMC), especially in type 2 patients.

Besides methyl-paraben sulfate, we detected benzoate and 3-hydroxybenzoate but not propyl-paraben



In the EMC group, the fill value was **44%** and fold change of 0.451.

Sulfonation increases estrogenic activity of parabens



Conclusion

- Paraben especially their sulfonated metabolites are key constituents of the cancer exposome posing a significant risk factor of estrogen-mediated cancers.
- For the first time, paraben molecules were detected in cervicovaginal lavages (CVL).
- Only sulfonated version of methyl-paraben was detected in the CVL.

Future Directions

- Reconstruction of paraben metabolism in healthy individuals and cancer patients based on detected metabolites.
- Identification of exposure related cancer risk biomarkers.
- Validation of clinical findings on paraben metabolism on host tissue outcome on cell models.