Modulating AHR sensitivity in Pilot whale fibroblasts

Sebastian Eide, Supervisors: Fekadu Yadetie



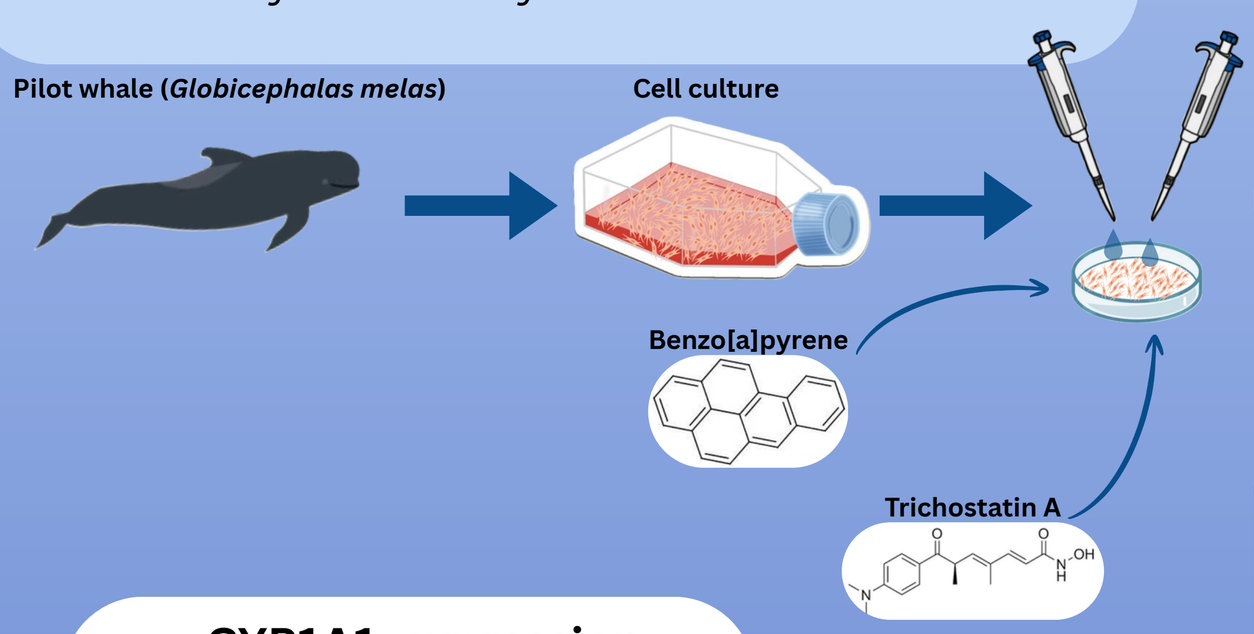
Did you know? The pilot whale is the second largest dolphin in the world, right behind the orca.

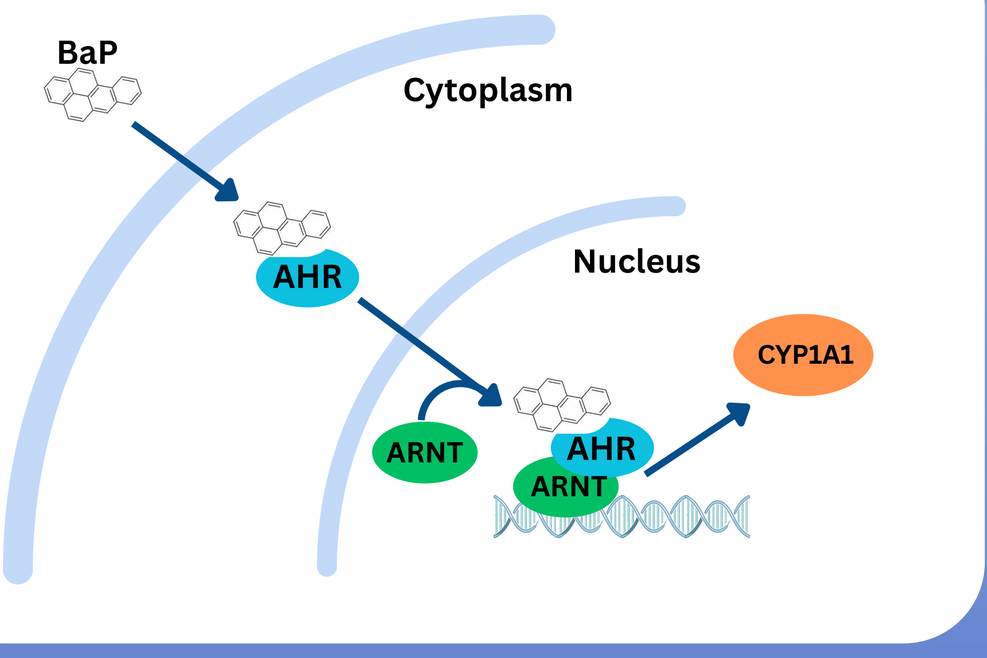
What's the problem?

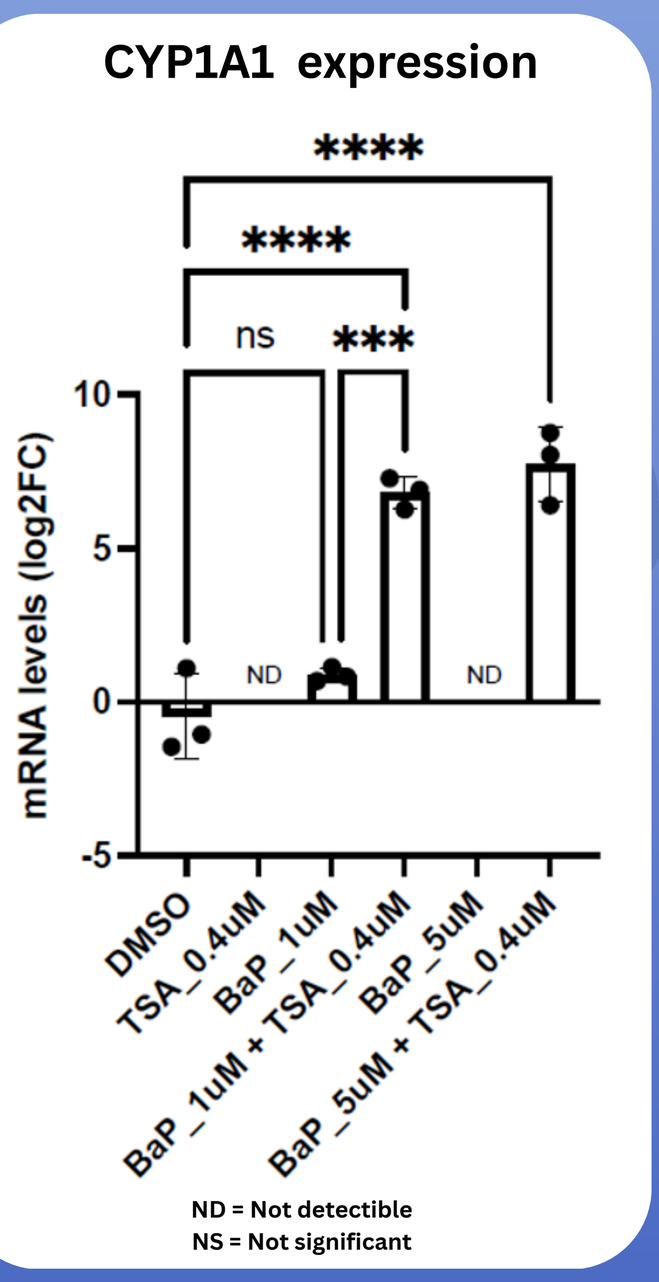
The pilot whale (*Globicephala melas*), is a dolphin at the top of the food chain, and it accumulates high levels of environmental pollutants. A common tool to study effects of such compounds on humans and animals are cell cultures, but fibroblasts from pilot whales are not very sensitive to AHR ligands like Benzo[a]pyrene (BaP). This is where Trichostatin A (TSA) can offer a potential solution, it inhibits deacetylation of chromatin, making DNA easier to reach for AHR. The tricky part is finding the right dose where the cells are more sensitive to BaP, but not adversely affected by TSA.

What did we do?

Using fibroblasts from biopsies of pilot whales, cells were cultured and exposed to various concentrations of TSA and BaP. BaP was used as it is a known inducer of CYP1A1. Following a 24 hour exposure, the cells were lysed, RNA was harvested and RT-qPCR and LDH assays were run. RT-qPCR was used to investigate AhR induction using CYP1A1 as the target gene, and LDH was used to check for unintended cytotoxicity from TSA.







What did we find?

RT-qPCR analysis of CYP1A1 revealed that a concentration of 0,4uM TSA elicits an increased induction of CYP1A1. LDH assay did not show any significant differences in cytotoxicity between different concentrations of TSA or BaP, indicating that 0,4uM TSA does not significantly affect cell viability. Together, this demonstrates that TSA can be used to modulate AHR sensitivity and increase CYP1A1 induction in pilot whale fibroblasts.

Did you know? Squid is the pilot whales' favorite food. It can dive down to 600m depths in search of them



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