WE194 Thyroid disruptors interfere with eye development and function in zebrafish L.A. Baumann, University of Heidelberg / Aquatic Ecology and Toxicology; H. Segner, University of Bern / Centre for Fish and Wildlife Health; T. Braunbeck, COS University of Heidelberg / Aquatic Ecology and Toxicology; D. Knapen, University of Antwerp / Zebrafishlab Dept Veterinary Sciences; L. Vergauwen, University of Antwerp / Zebrafishlab Dept Veterinary Sciences & SPHERE Dept Biology. Vertebrate eye development is partly regulated by thyroid hormones (THs). We investigated the effects of thyroid-disrupting chemicals (TDCs) on eye development of zebrafish at morphological and transcriptional level. To this end, zebrafish embryos were exposed to either propylthiouracil (PTU), a TH synthesis inhibitor, or tetrabromobisphenol A (TBBPA), which interacts with TH receptors, until 5 days post fertilization (dpf). The TDC exposure induced reduction of eye size and pigmentation together with altered cellular retina structure. We expected the TDC exposure to cause transcriptional changes of visual-system-related genes, which find their phenotypic anchoring in the observed eye malformations. Moreover, we investigated if the different TDC modes of action would affect similar molecular pathways in the eyes. Full genome microarray analyses of RNA isolated from eye tissue revealed that the number of affected transcripts was substantially higher in PTU- than in TBBPA-treated larvae. However, multiple essential components of phototransduction (e.g. phosphodiesterase, opsins) were responsive to both TDC exposures. Yet, the response pattern for the GO-class “sensory perception” differed between treatments, with over 90% down-regulation in PTU-exposed fish, compared to over 80% up-regulation in TBBPA-exposed fish. Additionally, the reversibility of effects after recovery in clean water for 3 days was investigated. Transcriptional patterns were still altered, and partly overlapped between 5 and 8 dpf, showing that no full recovery occurred. However, pathways involved in repair mechanisms were significantly upregulated, which indicates activation of regeneration processes. These results confirm the growing evidence that fish eye development is sensitive to TDC treatment and might represent a promising endpoint for the assessment of thyroid-related effects in fish.