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## GENERATING A 3D HUMAN THYROID MODEL *IN VITRO*

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The thyroid gland plays a crucial role during embryonic development and organogenesis. It further controls the metabolism of various adult organs. Mechanisms that drive thyroid morphogenesis have not been fully elucidated. The inter-follicular extra cellular matrix supports the interaction of the functional units, the thyroid follicles, where thyroid hormone (T3 & T4) biosynthesis takes place. The development of 3D structures *in vivo* requires cell-cell interactions and crosstalk. Thus, we are aiming an imitation of cellular crosstalk in order to acquire functional organoids by culturing primary human thyrocytes in a 3D environment *in vitro*. Isolated human primary thyrocytes are expanded in monolayer culture and cells are seeded in ultra-low attachment plates to allow aggregation and cellular interaction. Within two weeks of *in vitro* culture, primary human thyrospheres restore their transcriptional status similar to the native thyroid. Based on the multi-organ-chip technology, developed by tissue

GmbH, the interaction between selected organs can be mimicked. Due to the major impact of thyroid hormone on the metabolism, we want to investigate the interaction and influence between thyroid and organs such as liver or cardiac tissue by emulating the endocrine impact. Furthermore, based on our thyroid model, possible endocrine disruptors can be identified using our *in vitro* test system.

### Biography

Özlem Vural studied Biotechnology at Technical University of Berlin. After working as a student assistant on *in vitro* chondrogenesis in the Group of Prof. Dr. Roland Lauster, she started her PhD studies focusing on the generation of a human 3D thyroid model for substance testing. Her research interests include "Human organ models, tissue engineering and thyroid".

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