Imaging of small samples from different sides can be challenging if they are embedded in a sample holder for upright or inverted microscope stands. As a solution, the Horizontal 2-Photon Microscope can be used. It enables the rotation of the sample and thereby, not only imaging from all sides but also an increase in the imaging depth.

LaVision BioTec’s Horizontal 2-Photon Microscope is a new device that is based on a 2-photon laser scanning microscope in which the sample can be rotated by 360°. Therefore, the sample is fixed on top of a small rod which can be rotated and the objective is placed in a horizontal position in front of the sample. The excitation laser beam is deflected by a standard scan mirror and scans over the sample. The fluorescence signal is then detected by PMTs. To allow imaging of biological samples in their natural environment, the sample is placed in a chamber that can be filled with water or buffer solutions.

The rotation possibility not only increases the imaging depth but also delivers a good resolution in all dimensions. Finally, imaging freestanding samples from different angles of view allows a tomographic reconstruction.

In first measurements of zebrafish development will be presented.