1163-68-1002 **Rodrigo Rojas Moraleda*** (rodrigo.moraleda@nct-heidelberg.de), AG. Jäger, Im Neuenheimer Feld 460, 69120 Heidelberg, 69120 Heidelberg, Germany, and **Bénédicte Lenoir**, **Wei Xiong**, **Nektarios A. Valous** and **Niels Halama**. *Detection and segmentation of capillary structures in biomedical images based on a computational topology framework.* Preliminary report.

In histology, identifying and classifying 3D structures such as lymphatic capillaries is not a trivial task. This is mainly due to the wide variability in shapes and sizes adopted by these capillaries after the biological sample is prepared on a glass slide and digitized as a 2D image. On the other hand, topology and homology are mathematical frameworks well known for providing tools to classify spaces, regardless of their geometry.

This work is a continuation of the progress made in the development of computerized analysis algorithms based on the principles of persistent homology to filter and classify cell patterns in histological images. In particular, this work focuses on cell patterns describing walls of lymphatic capillaries.

By changing the representation of a histological image into a collection of simplicial complexes where cells represent vertices and edges represent relationships between pairs of cells, homology classes dimensions one and two are computed to perform the segmentation and classification of lymphatic capillaries.

For performance evaluation, images acquired from histological sections of ovarian tissue are used. Accuracy is verified against expert annotations. (Received September 14, 2020)