

How antibodies are optimized into Optibodies™

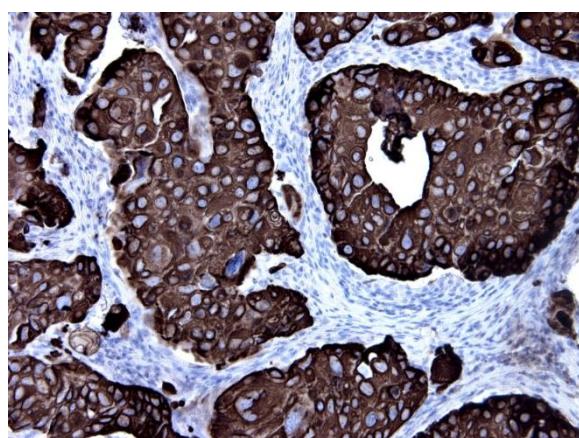
Immunohistochemical analysis has nowadays a very important role in routine diagnostics. Optimization and validation of such a complex method contributes to making staining results comparable between laboratories. For BioSiteHisto experts, these matters are a challenging but pleasant mission at work in the BioSiteHisto GLP- laboratory, which is part of the Nordic BioSite corporation.

Antibody optimization is a process where pretreatment methods, antibody dilution, incubation times, blocking and detection conditions are fine tuned for that antibody under controlled laboratory conditions. Measurable values are antibody specificity, sensitivity and stability. Teppo Haapaniemi is the corresponding scientist of these factors in BioSiteHisto, a Finland-based laboratory focused on tissue- and cell-based antigen detection technologies. He is involved with optimization on a daily basis.

“The main points when optimizing an antibody is selecting the correct tissues, which are appropriately fixed and processed, and of course, selecting the correct primary antibody”, says Haapaniemi.

“Tissues should express antigens in a variety pattern. Weakly expressing tissues are also necessary in the process, because they offer important information about antibody sensitivity, specificity and signal to noise ratio”, he explains.

Optimization of antibodies should always be performed with more than one antibody against the same tissue antigen to get results for comparison. Different pretreatment methods are important to test as well as fine tuning of antibody concentration and incubation times. This also helps avoiding one of the biggest challenges with this method, which is intra- and interlaboratory variation of the staining result.



Human ductal breast cancer stained with Ckpan [BS21] Optibody™

Together with BioSiteHisto's experts, Haapaniemi has optimized a series of mouse monoclonal antibodies. Their own creations are called *Optibodies*™, a range of antibodies for markers that are clinically and diagnostically important. *Optibodies*™ are carefully optimized and fine-tuned for the needs of today's clinical IHC laboratory. They are also tested and optimized using NordiQC recommendations of control tissues as well as staining criteria.

“From a clinical perspective, antibodies must be specific with high affinity towards their epitopes. Of course, they also have to be flexible and reliable to use, and have a good Lot-to-Lot-consistency. These are all our goals during the whole process of producing Optibodies™”, Haapaniemi says and continues talking about BioSiteHisto’s additional services.

“Our team at BioSiteHisto performs antibody optimization based on long experience. We offer not only optimization for antibodies against human soft and hard tissues, but also rodents, xenograft tissues and other animal origins. Our goal is to be reliable and effective, but also flexible according to client’s needs.



Cellbiologist Teppo Haapaniemi is a corresponding scientist of immunohistochemistry at BioSiteHisto.