OFFSPRING BIOSCIENCES
senior partners in cell and tissue imaging

Validating and optimizing quality and performance of tissue samples and bio-tools

Why is it important?

It is our experience that many published data rely on poorly characterized and functioning bio-tools (e.g. antibodies). This may lead to incorrect claims regarding the distribution and regulation of a biomarker (e.g. representing a drug target, efficacy read-out or a pathological process). The data variance introduced by differing qualities in tissues (affecting e.g. the preservation of antigens) can also easily lead to complete loss of information regarding regulation of e.g. diagnostic or efficacy biomarkers.

What can it be used for?

By carefully selecting the antibodies and optimizing the IHC assay protocols as well as evaluating the tissue quality/integrity, we optimize the likelihood that the data obtained are correct and reliable.

Our services

- **Procurement of high quality tissues** (animal and human). This is achieved (when feasible) by ensuring standardized handling, processing and storage of tissues. In cases when this cannot be controlled, Offspring have developed efficient methods to evaluate whether e.g. protein antigens are well preserved in the samples (Fig 1). This is achieved by screening the tissues by IHC staining for carefully selected tissue antigens expressed in cell types found in all tissues in an easily recognizable and predictable pattern. This will allow us to identify and remove tissue samples of inferior quality from the analyses. This is particularly important in studies on post mortem-collected human tissues where the tissues quality often vary greatly.
- **Ensuring specific and optimized tissue staining assays**. Most frequently we perform analyses for the distribution and regulation of proteins and peptides within tissue sections (using immunohistochemical techniques). But our deliveries also include analyses of mRNA (using in situ hybridization histochemistry) and other biological entities such as phosphoinositides and gangliosides (using tagged proteins with specific binding properties). To establish specific staining assays, we conduct careful experiments to ensure that these assays deliver reliable, specific and sensitive results. An example of general work-flow employed to establish e.g. a immunohistochemical assay is given below:
  I. **Identification and validation of one, and preferably two, high quality antibodies with pre-existing data that supports their usefulness for IHC analyses**.
  II. **Establishment of an optimized IHC staining protocol, using positive and negative control tissues.**
  III. **Employ the best performing antibody/IHC protocol to study tissues. Include pre-validated tissues in each experiment as historic controls.**

More detailed specifications for this work can be given on request.

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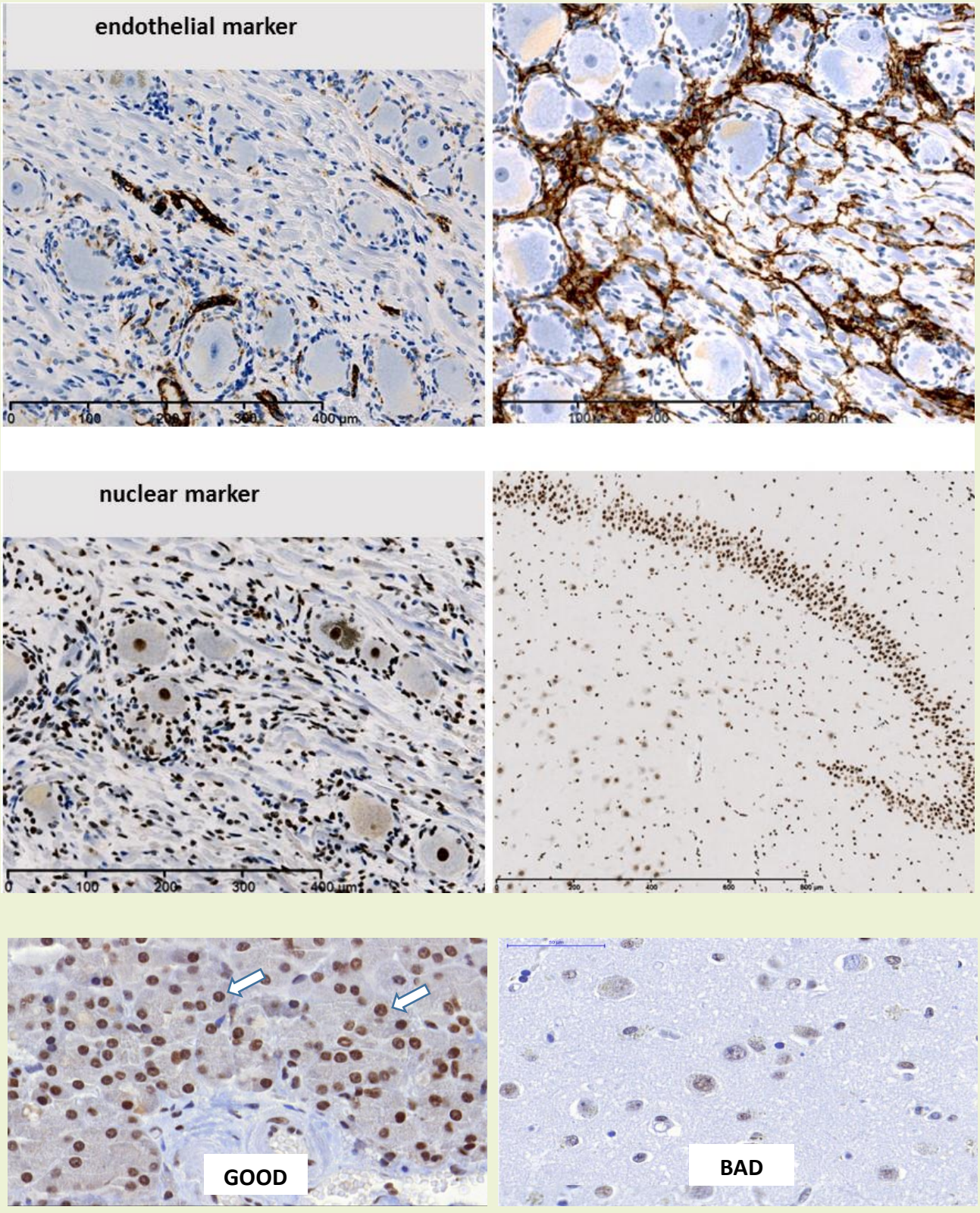
Figure 1


endothelial marker
0
100
200
300
400 µm
nuclear marker
0
100
200
300
400 µm
GOOD
BAD