Characterisation of methylglyoxal stress in human colorectal cancer and liver metastases using immunohistochemistry.

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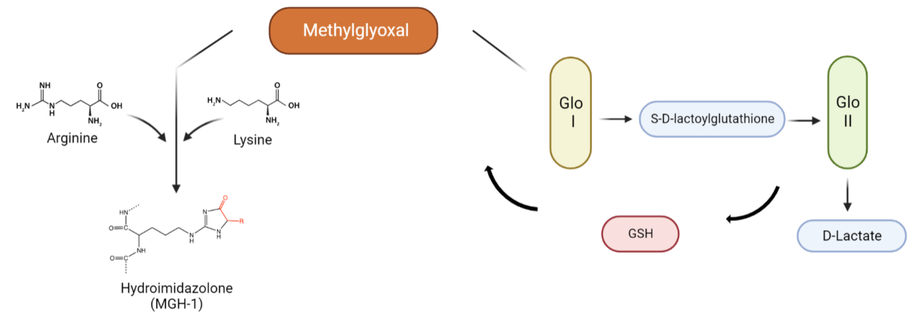
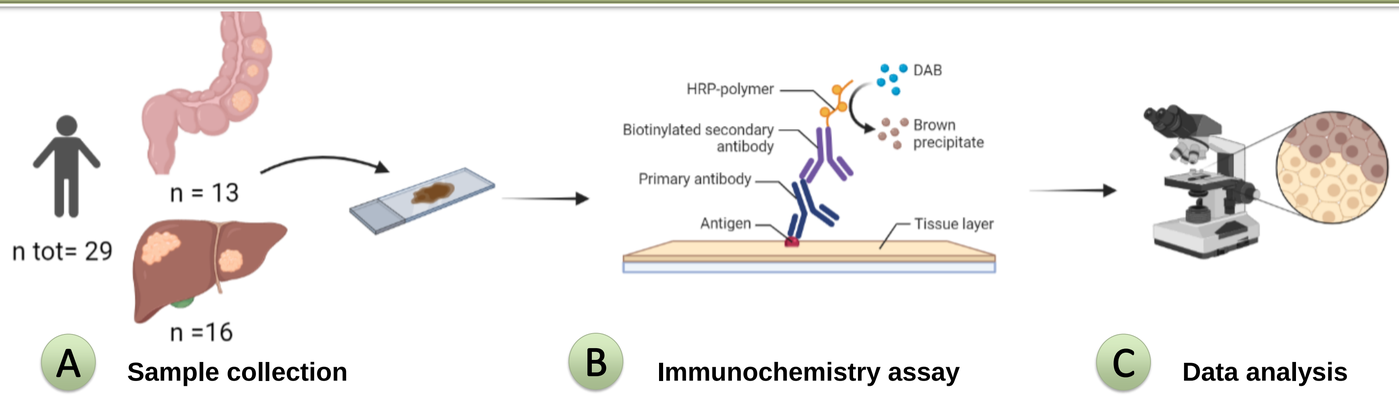
Introduction

Cancer cells metabolism is based on aerobic glycolysis.
A side product of glycolysis is methylglyoxal (MG), which is highly reactive and induces production of adducts, namely Hydroimidazolone (MGH1).
Our team has previously demonstrated that MG stress is detectable in colorectal cancer (CRC) as a common feature. The glyoxalase system, composed of glyoxalase I (Glo-1) and II (Glo-2), is able to neutralise the production of MG by producing D-Lactate.



Material & Methods



List of Antibodies:

- Anti- Hydroimidazolone (**MGH-1**)
- Anti- Glyoxalase I (**Glo-1**)
- Anti- **Ki-67**

Colorectal cancer presents methylglyoxal (MG) stress

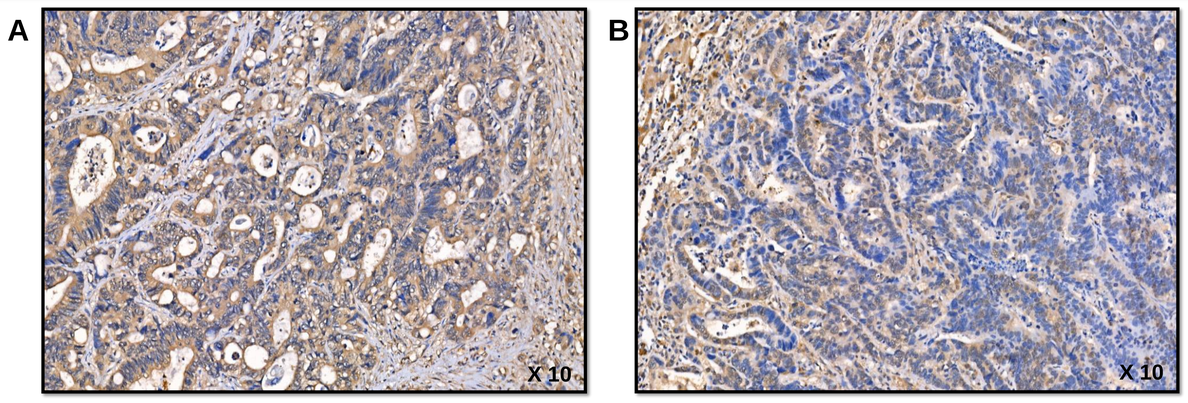


Figure 1: Hydroimidazolone (MGH-1) adducts are revealed in the cytoplasm of both primary colorectal **(A)** and liver metastatic lesions **(B)**.

Glo-1 has nuclear localisation in CRC

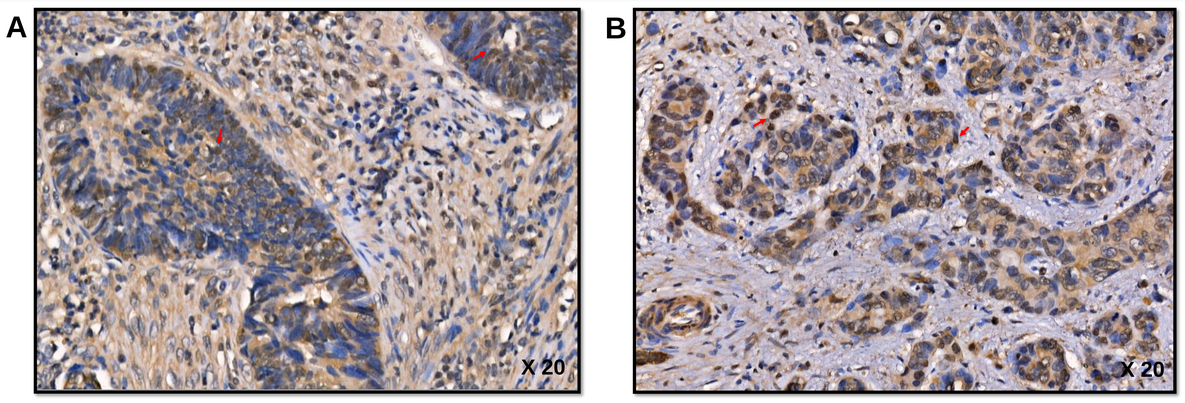
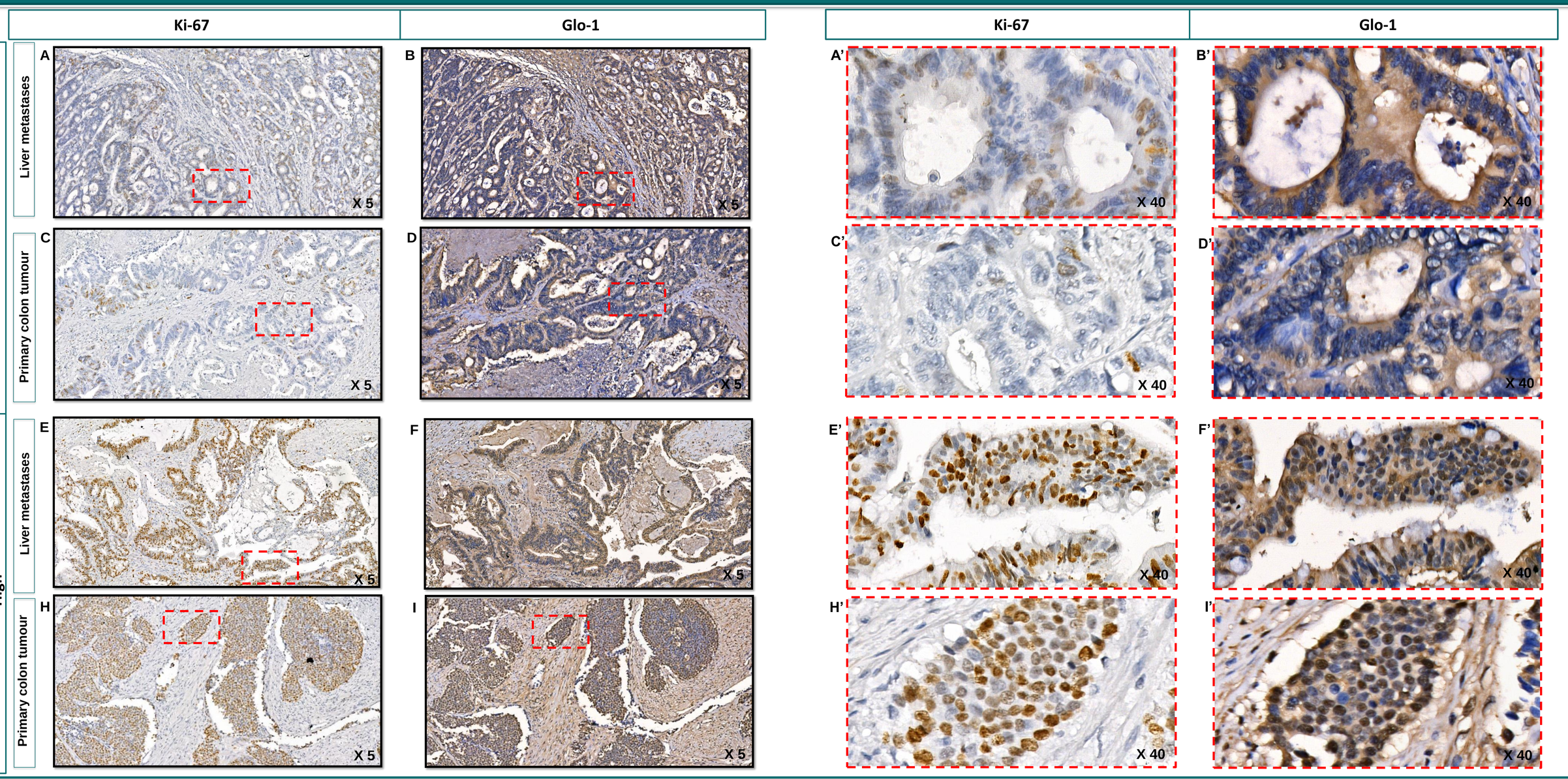


Figure 2: Glyoxalase I (Glo-1) staining is detectable in the nucleus (red arrows) in primary colorectal **(A)** and liver metastatic lesions **(B)**.

Glo-1 nuclear detection correlates with proliferation in CRC lesions



Conclusion

New cases in ongoing studies will help determine the importance and function of Glo-1 in the nucleus. Larger series of CRC and metastatic lesions are necessary to assess the methylglyoxal stress role in CRC and the potential interest of targeting MG stress. The ectopic nuclear localisation of Glo-1 deserves further exploration, knowing that histones are well described MG target and suggest the potential role of Mg stress on epigenetic regulation.

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