HISTOLOGY - MOLECULAR - IMAGING

In Situ Hybridization

Ricardo V. Lloyd MD, PhD

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Rationale for ISH

- Analyze the morphological distribution of targets of interest.

Definitely needed for:

-Long noncoding RNAs

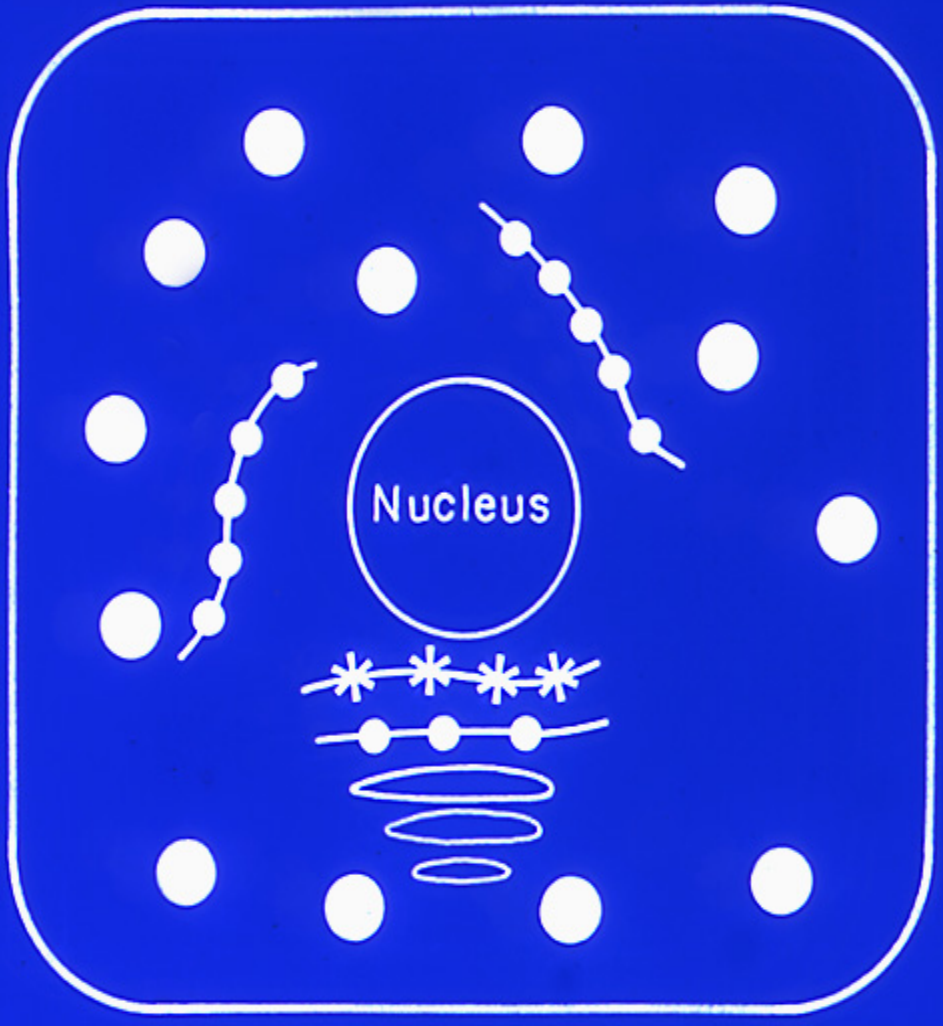
-MicroRNAs

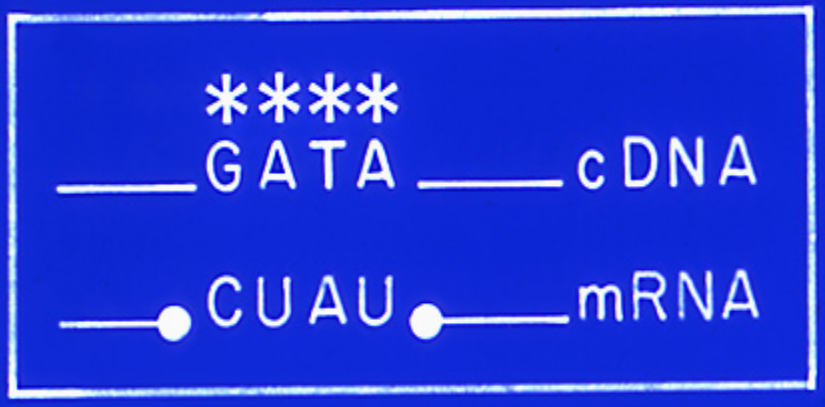
May be used for :

-Protein targets without good antibodies

Other uses:

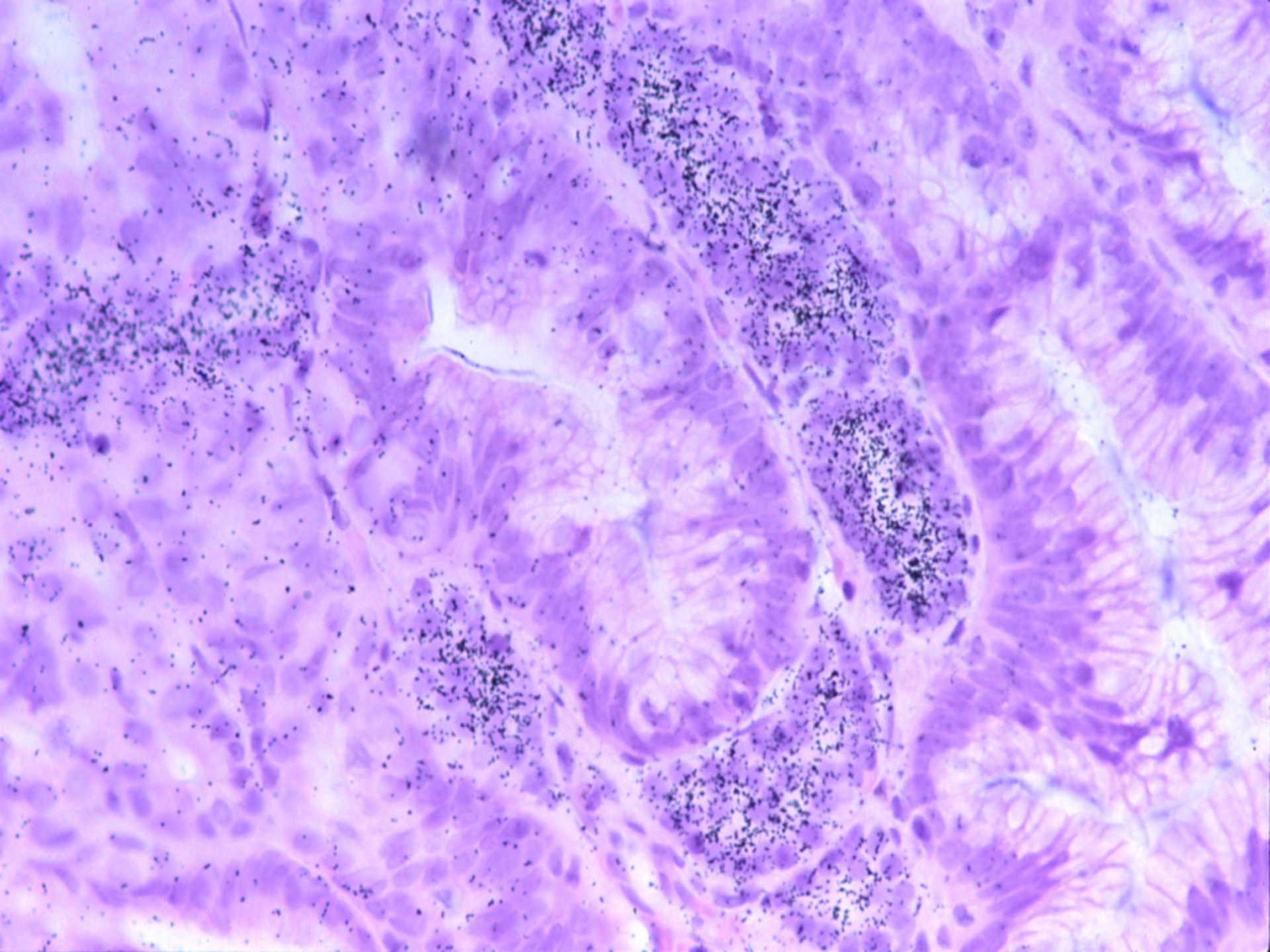
-Other RNA and DNA targets


Nucleus

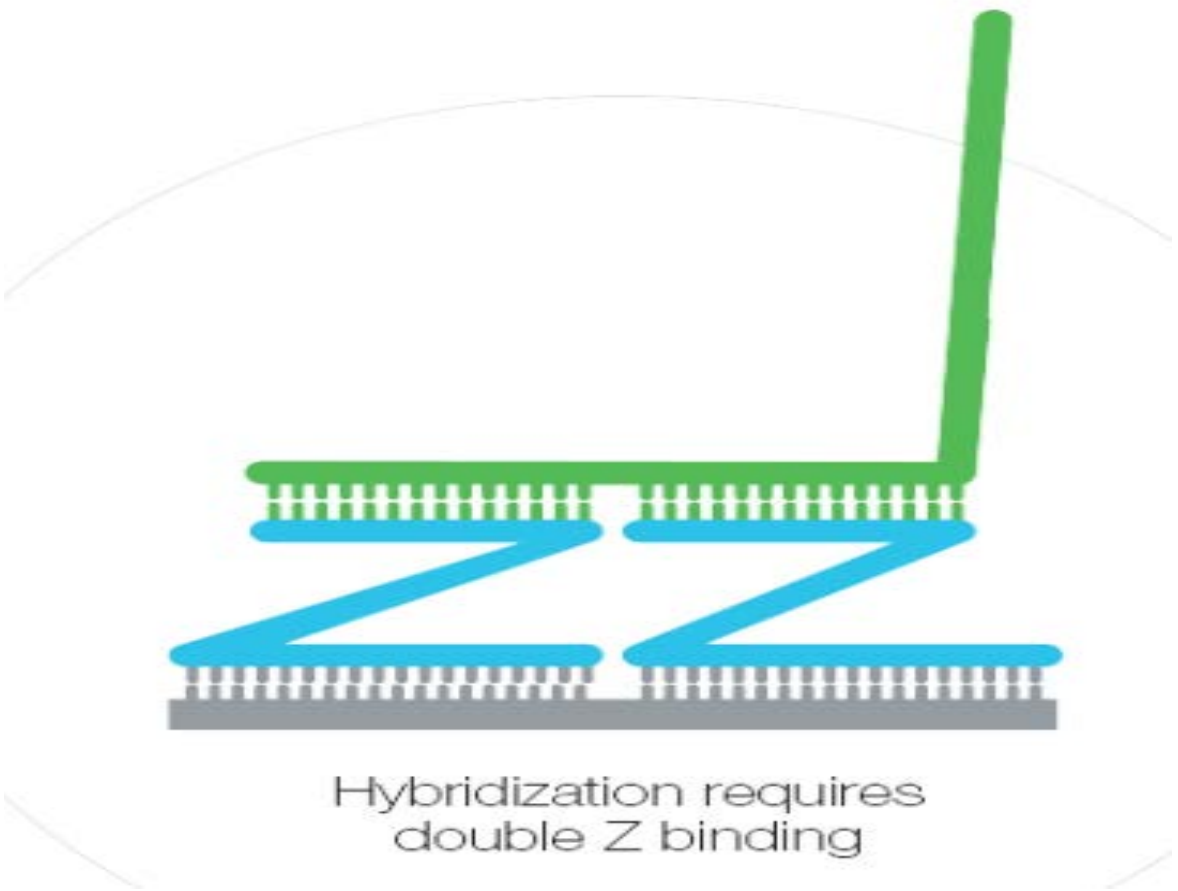

****
GATA
cDNA
CUAU
mRNA

TISSUE FIXATION

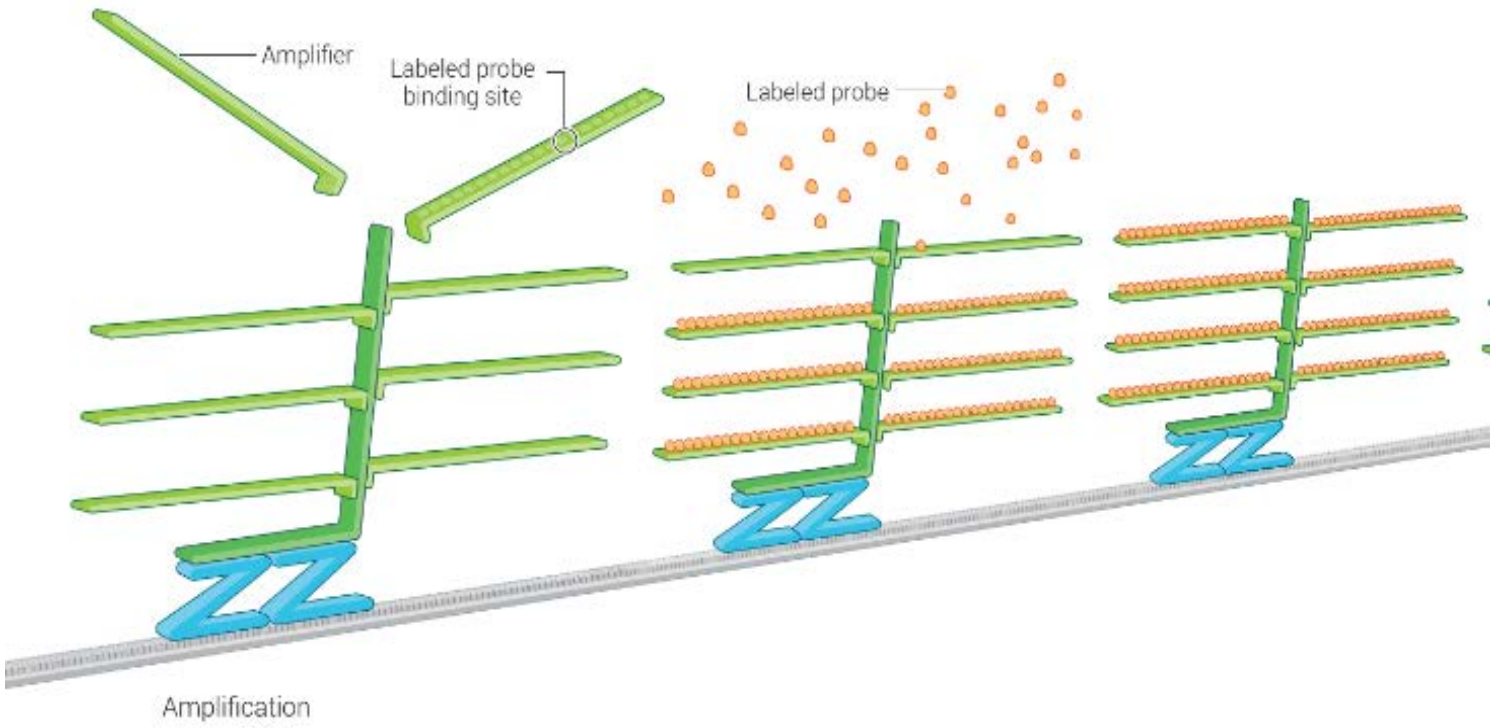
Paraformaldehyde
Neutral buffered formalin



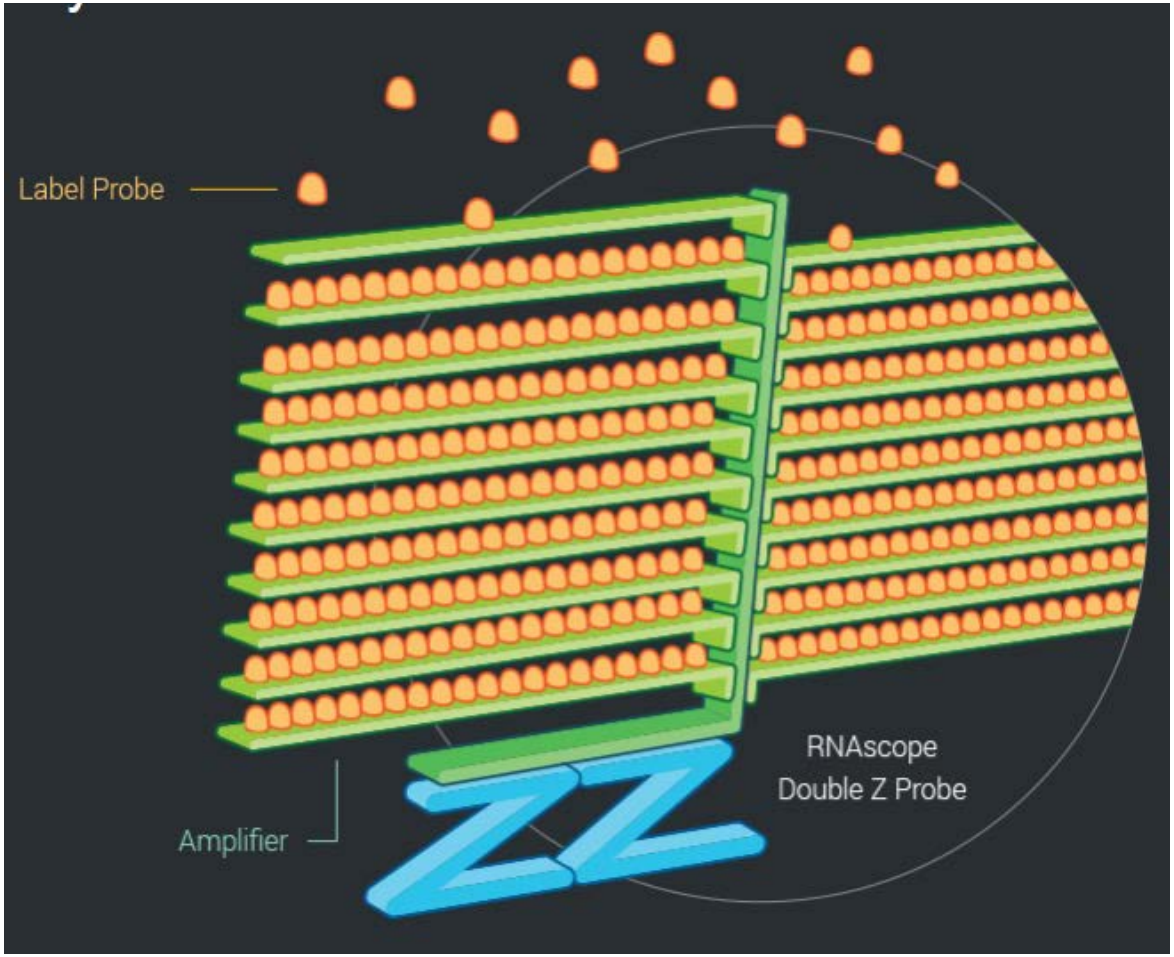
RNAscope



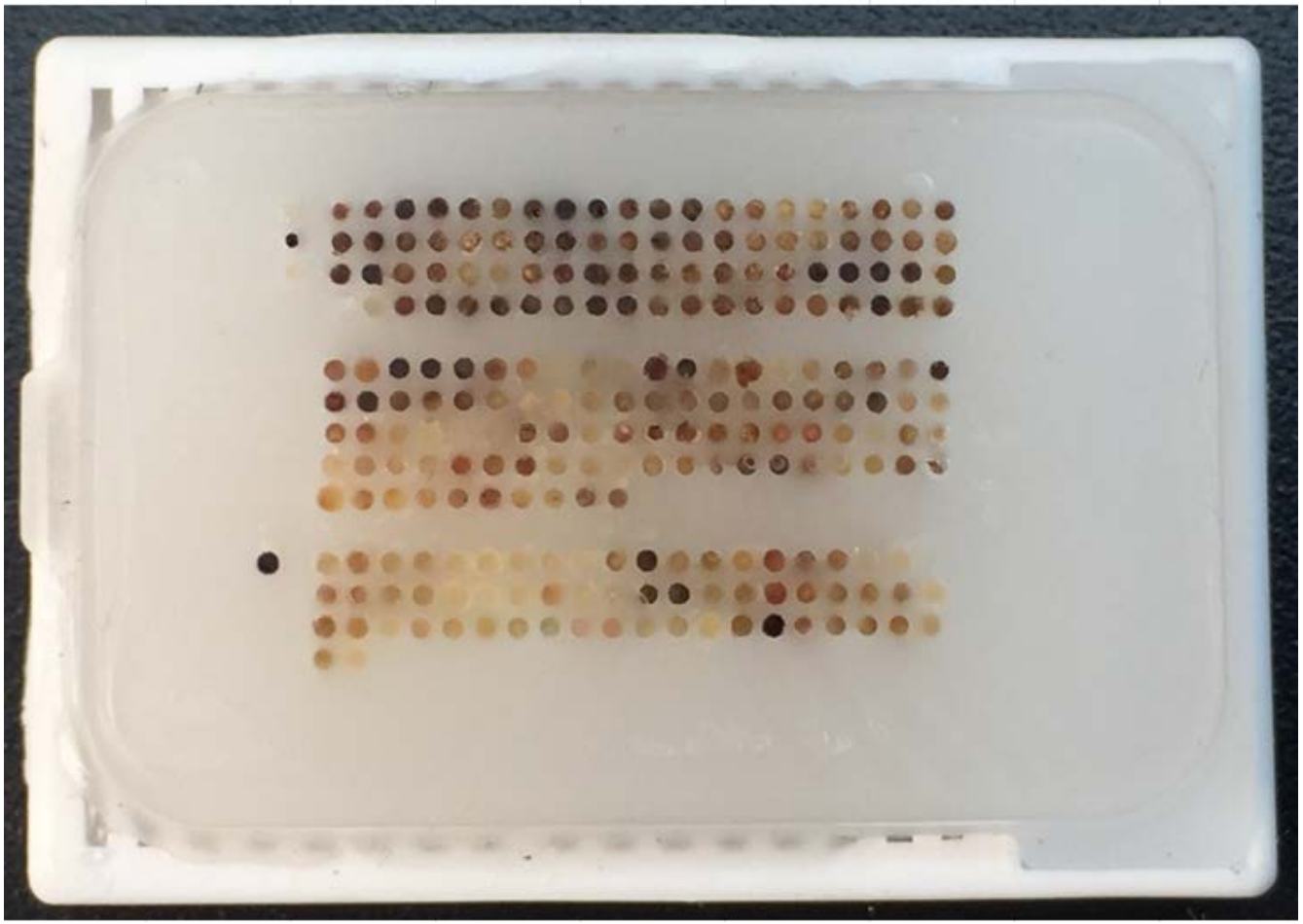
RNAscope

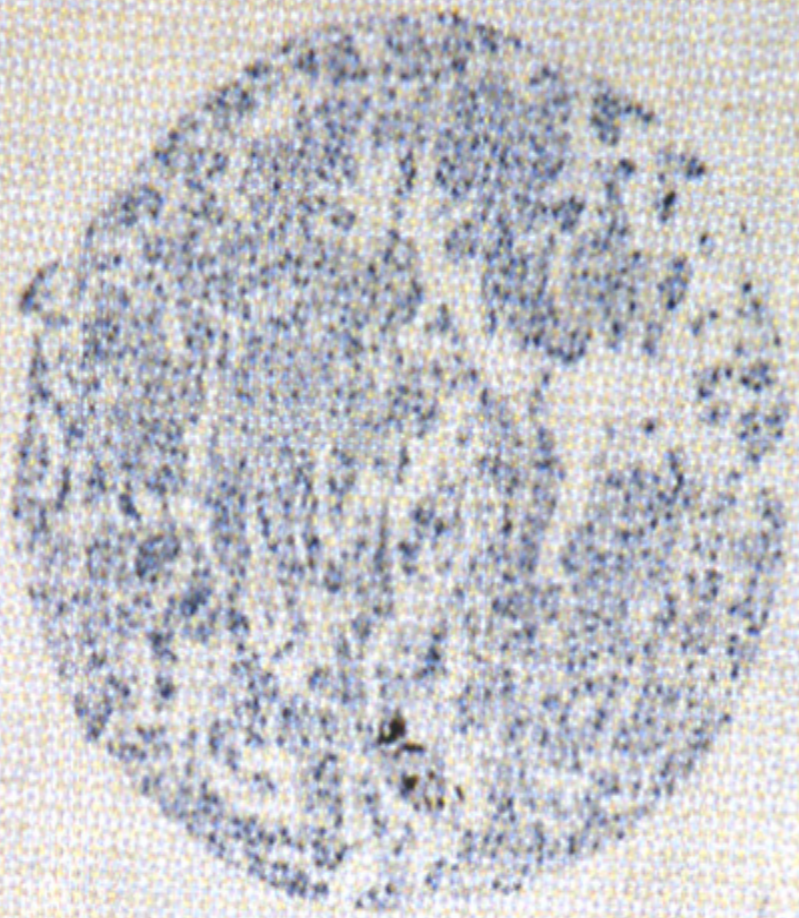

Amplifier
Labeled probe binding site
Labeled probe
Amplification

RNAscope

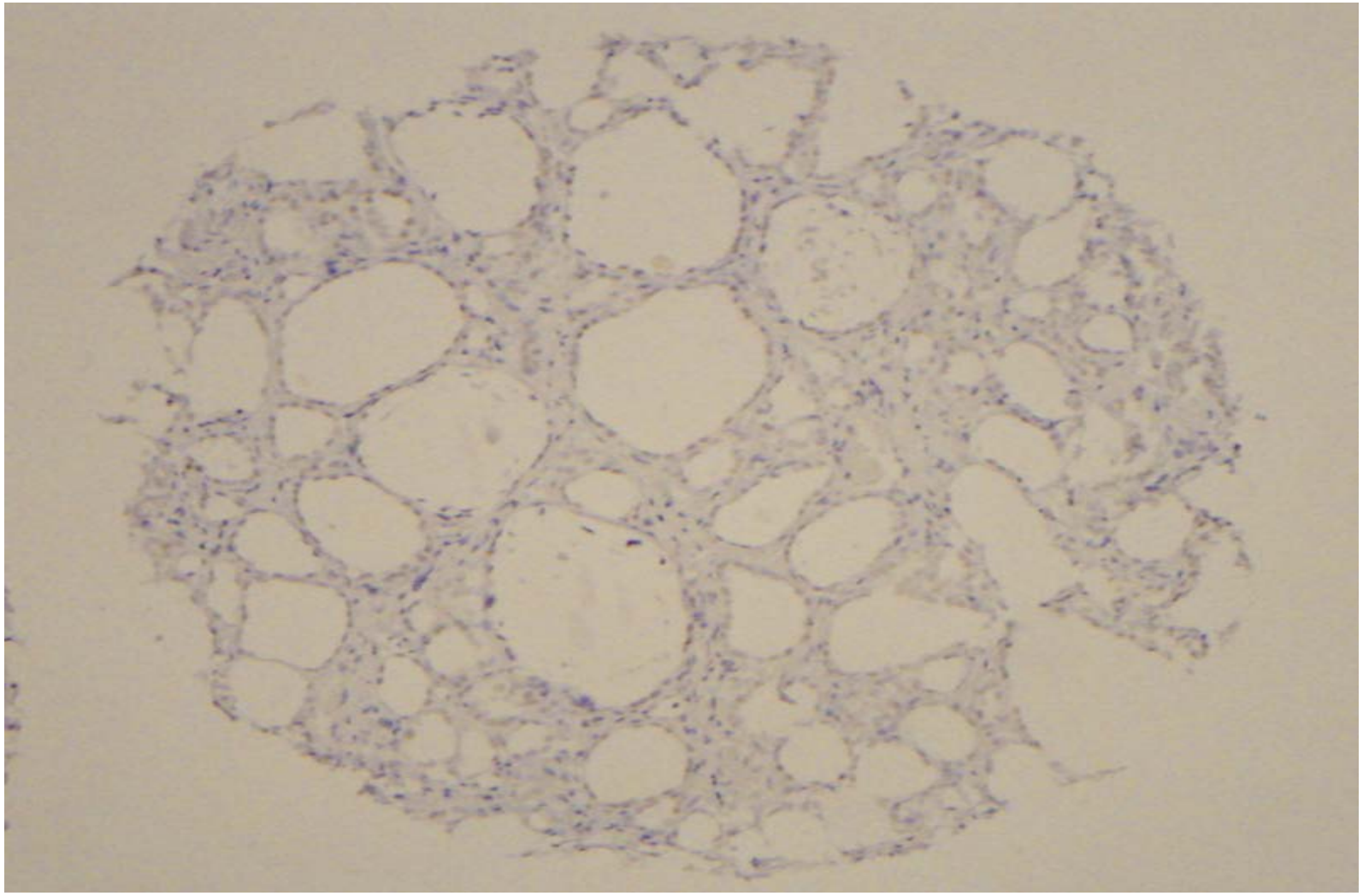


Tissue Microarray (TMA)

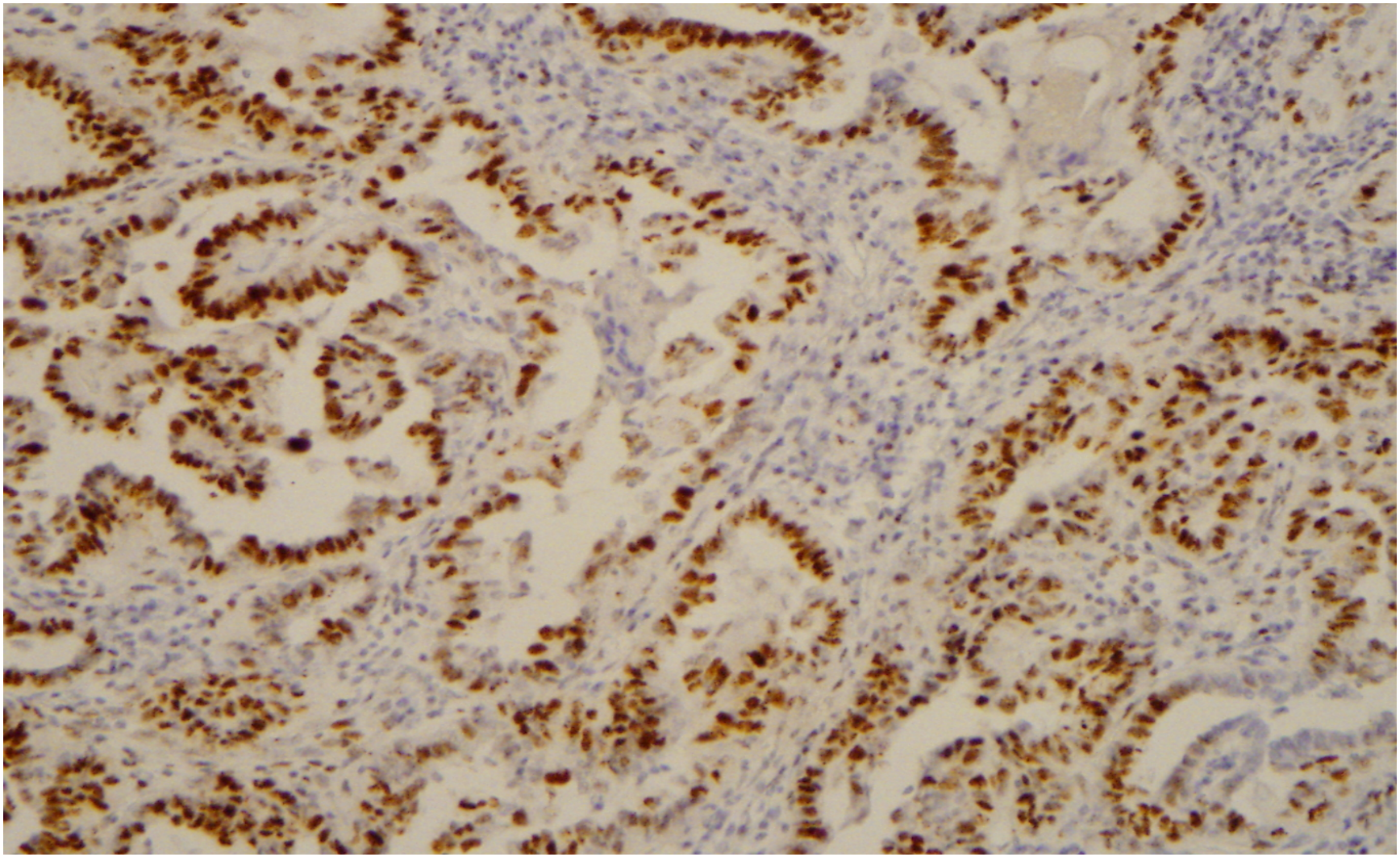




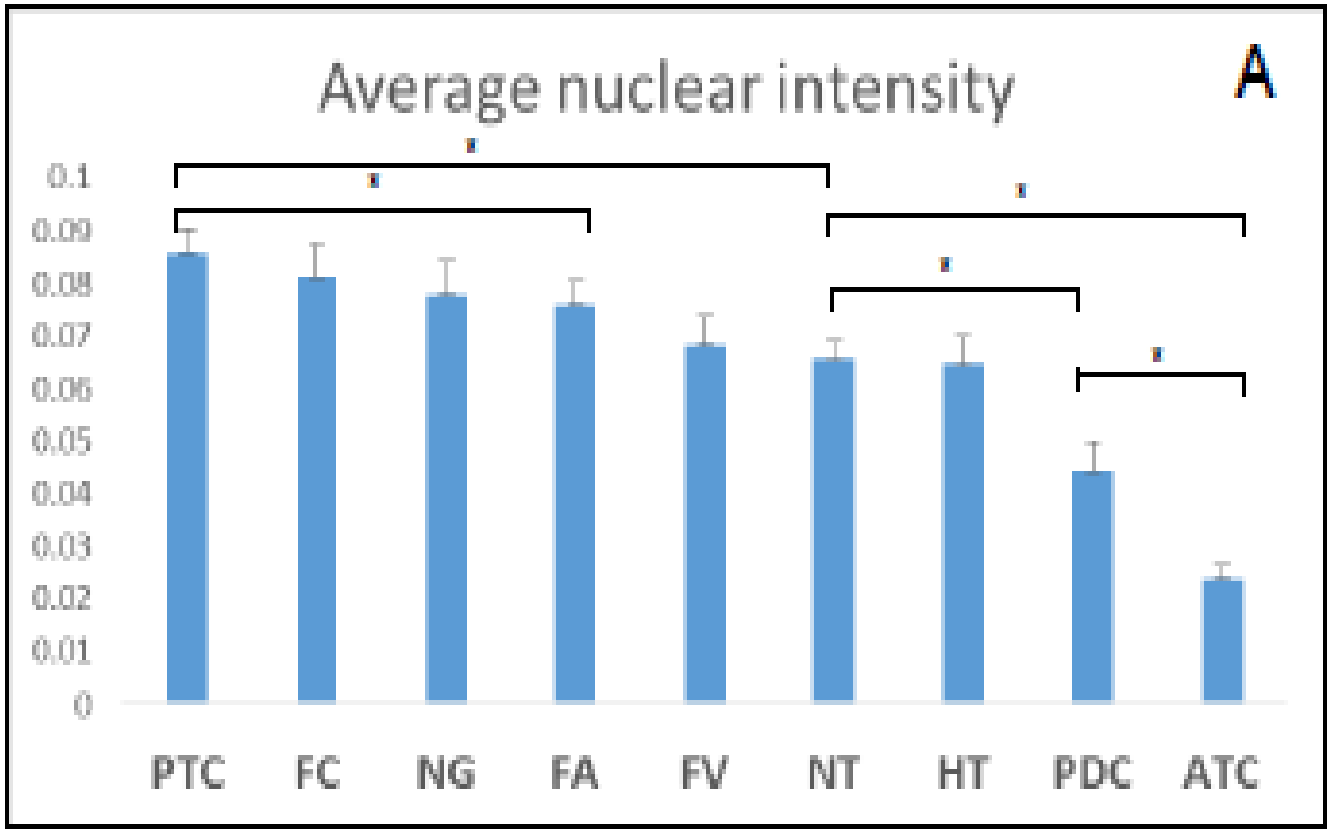
MALAT1 lncRNA



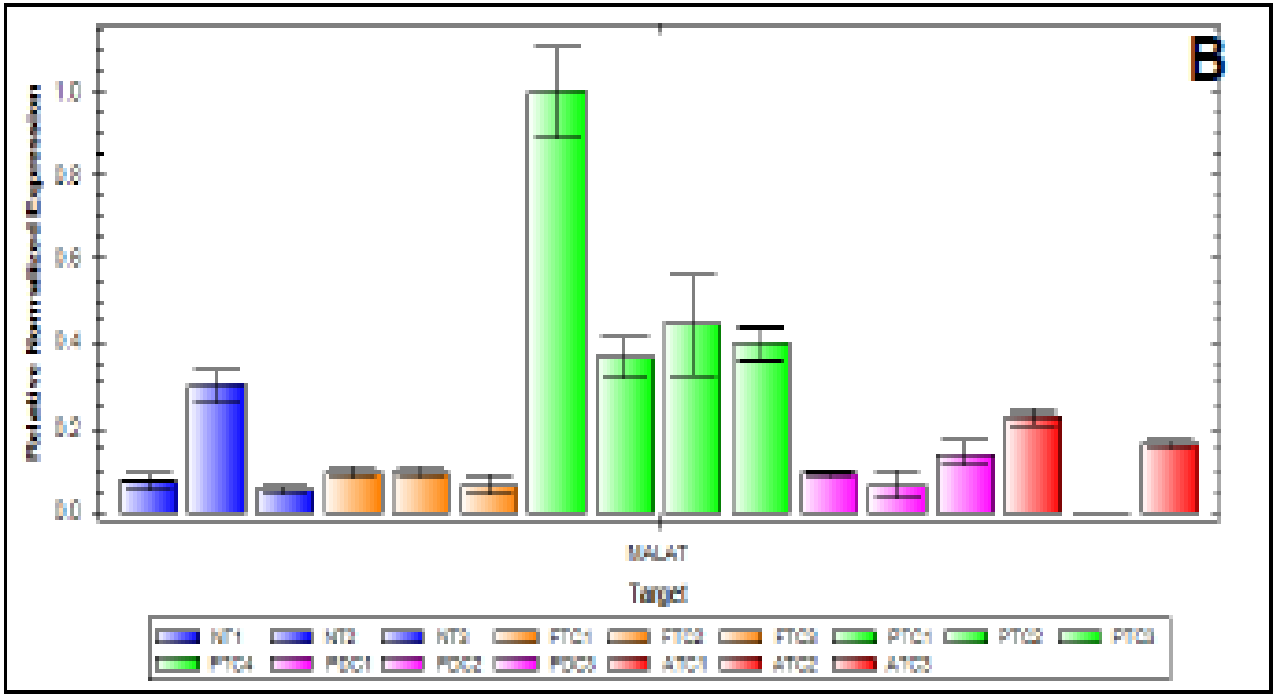
MALAT1-lncRNA in Thyroid



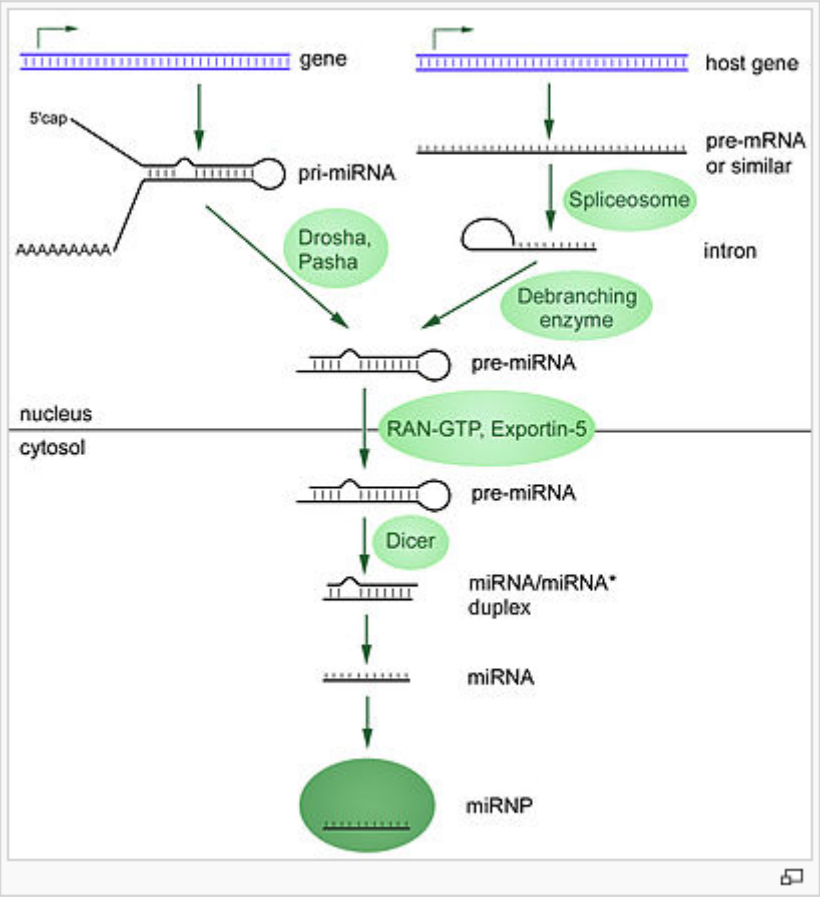
Vectra Analysis of Malat1 lncRNA



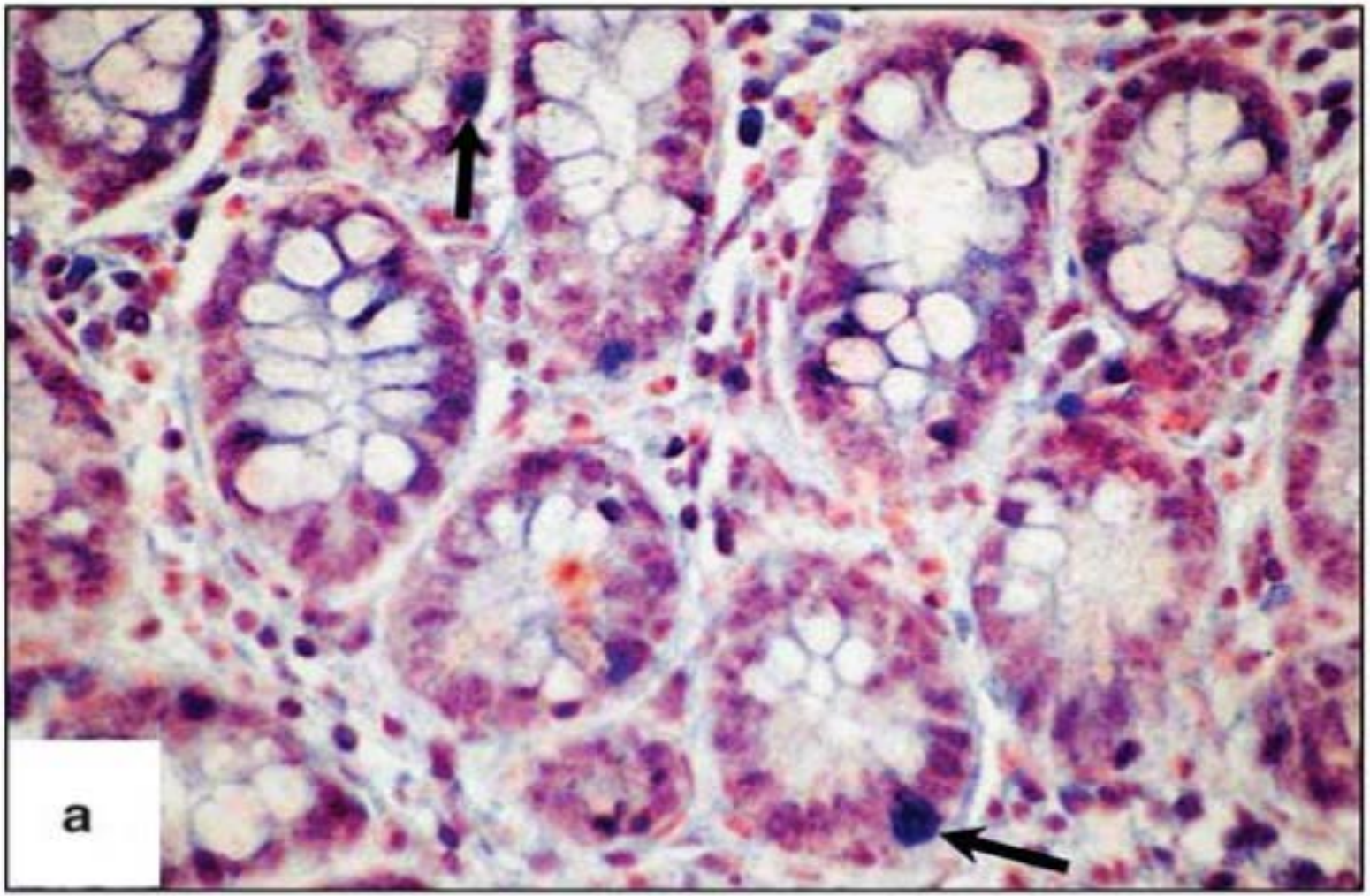
RT-PCR Analysis of Malat1 lncRNa



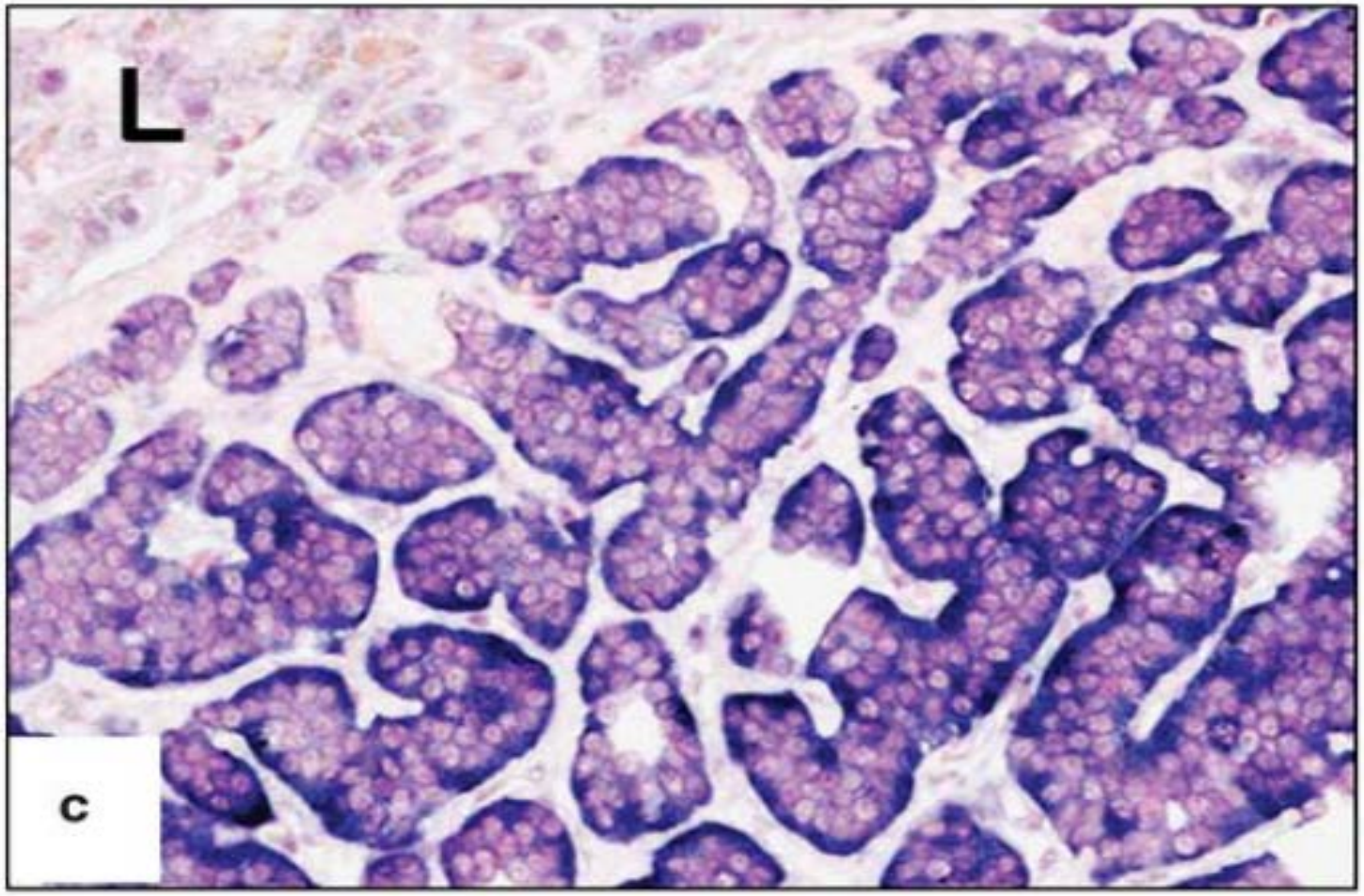
MicroRNA Synthesis



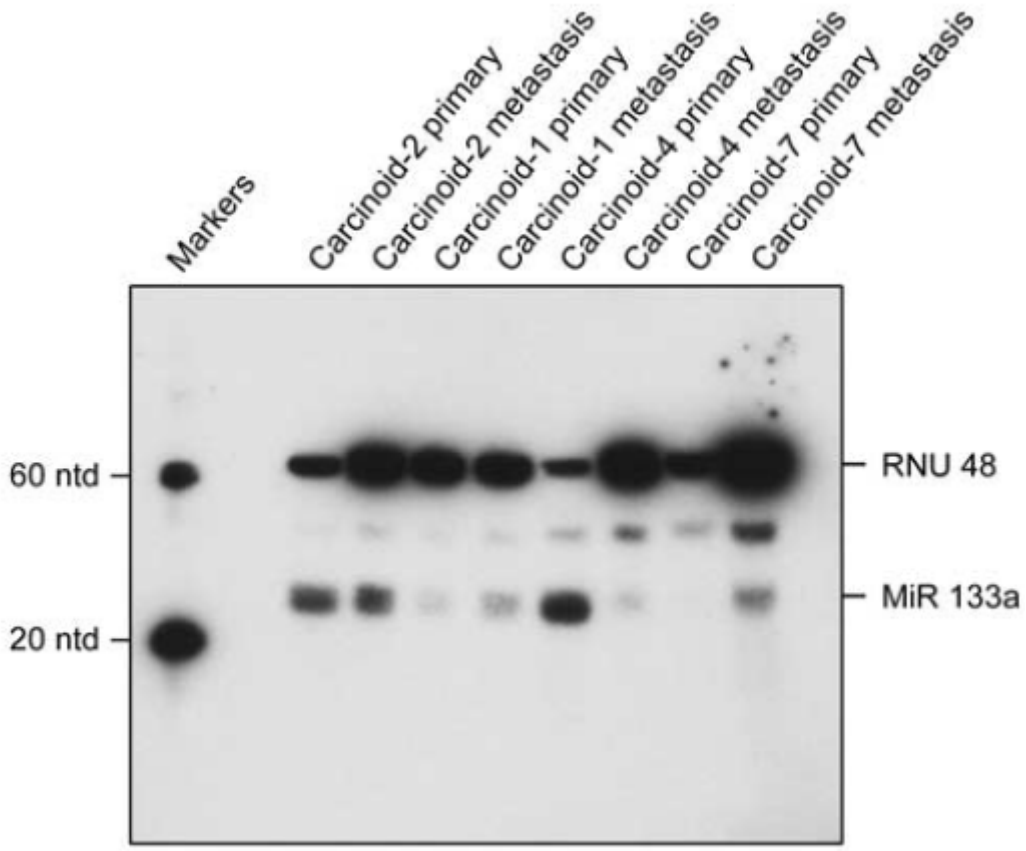
miR-133a in Small Intestine

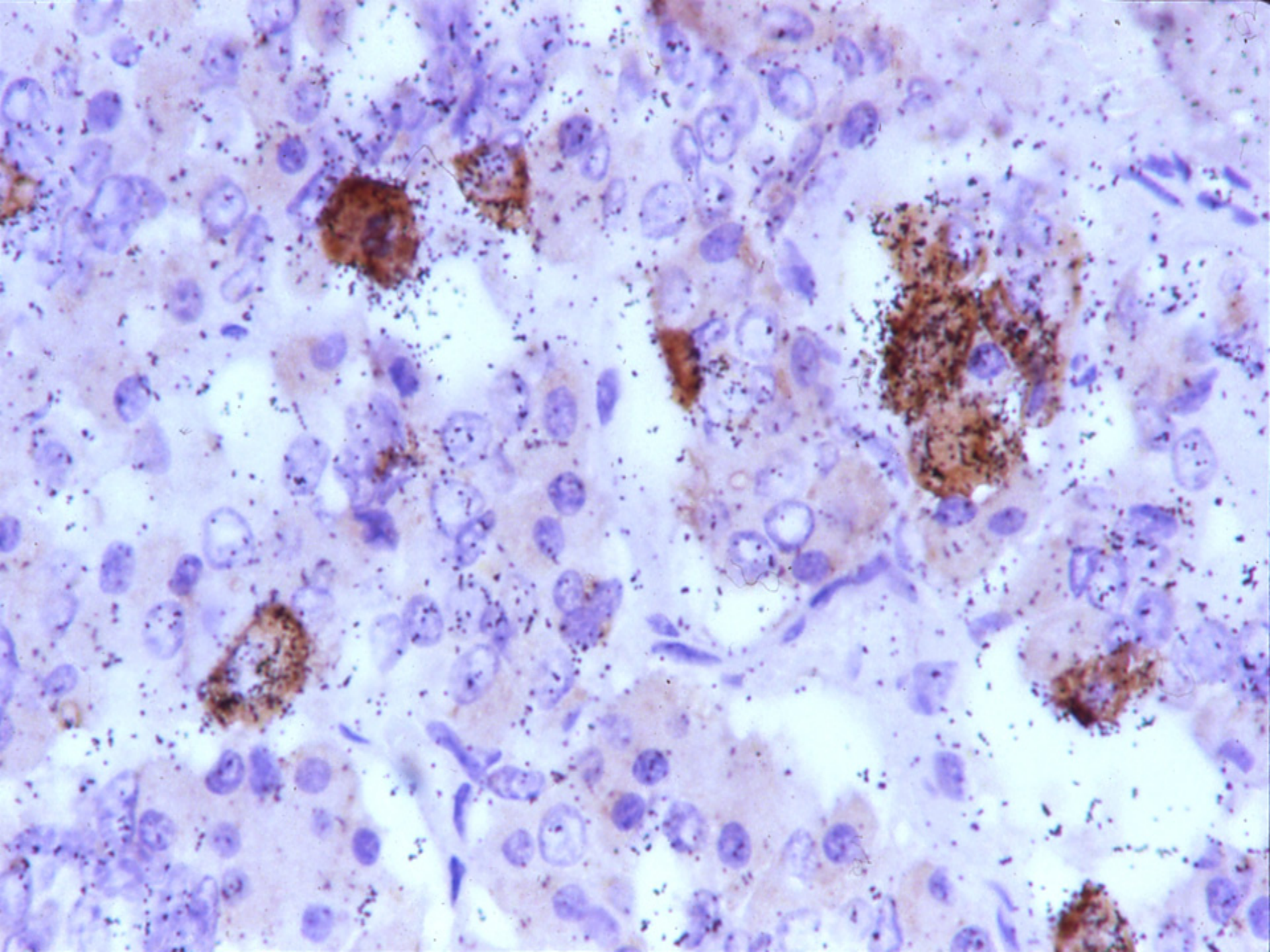


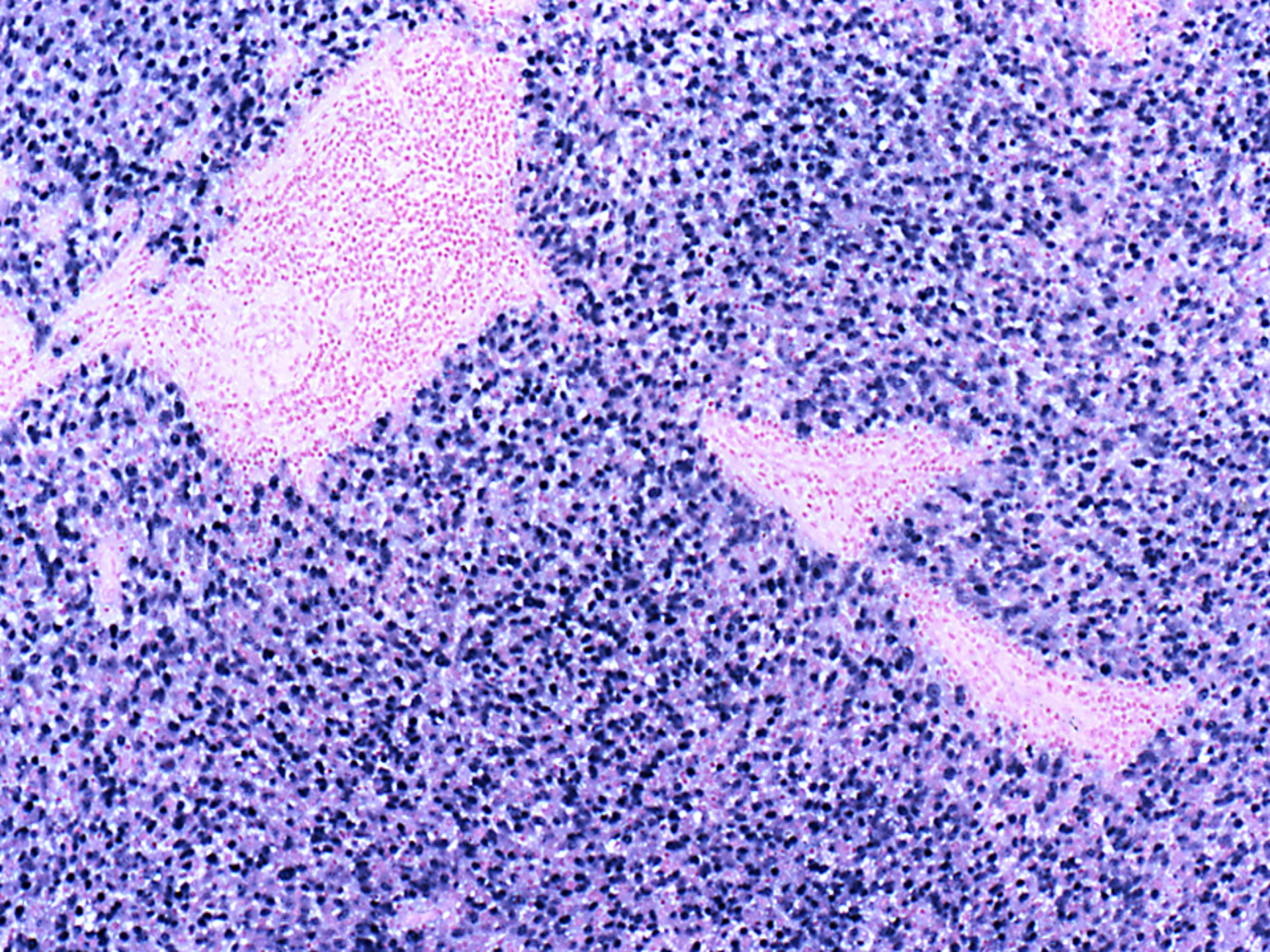
miR-133a in Ileal Carcinoid (NET)

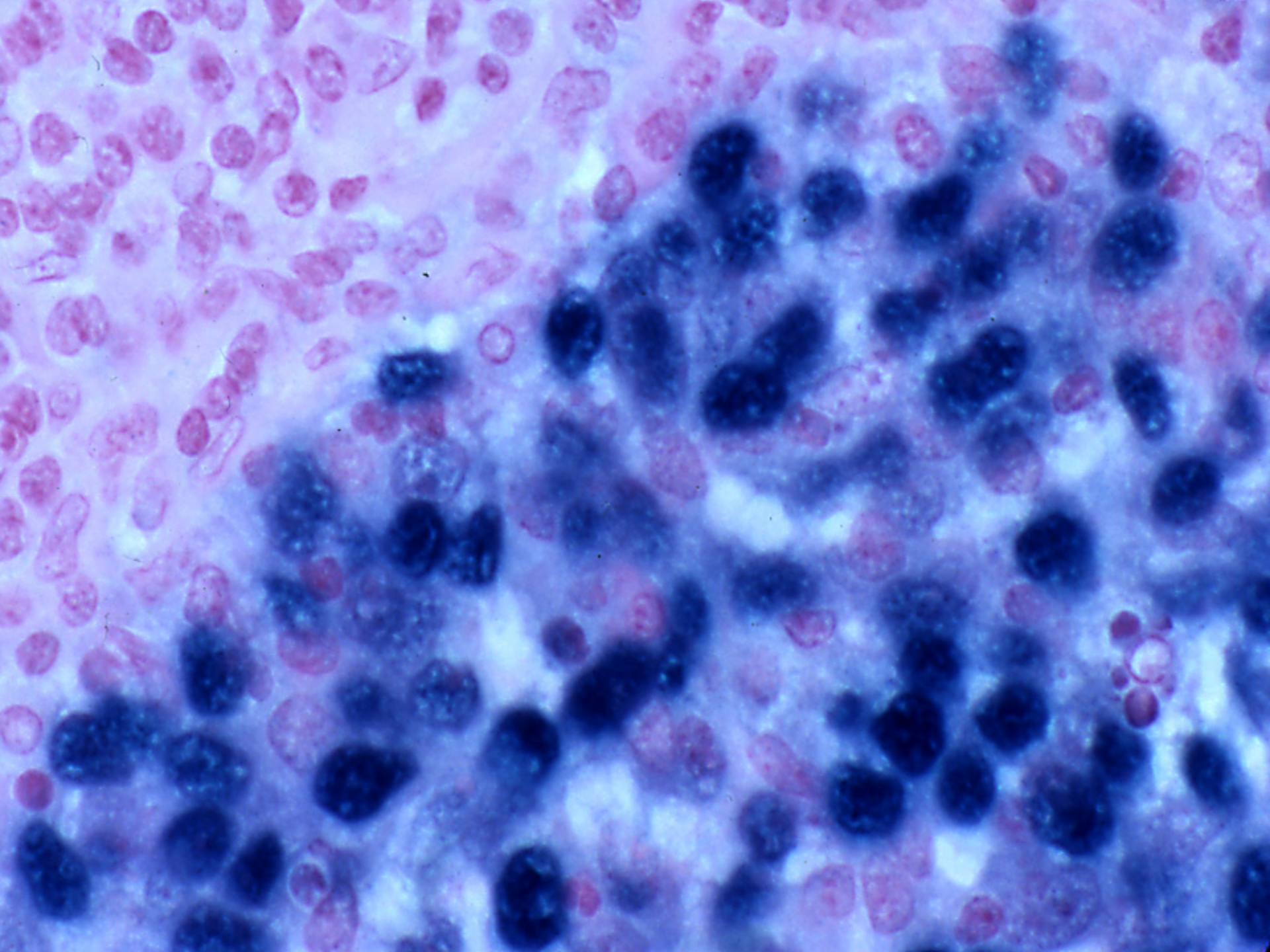


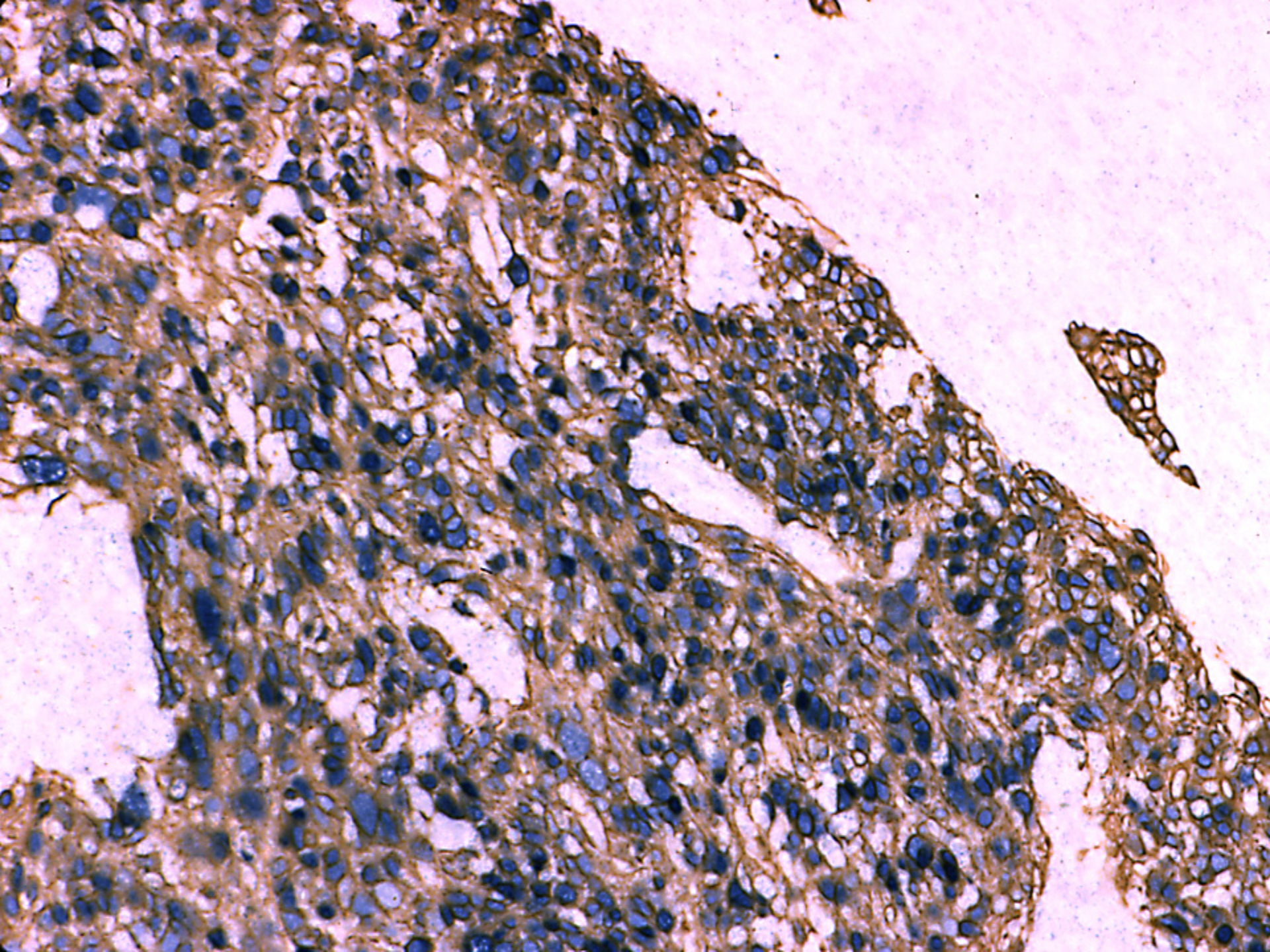
Northern Blot miR-133a











FUNGAL INFECTIONS

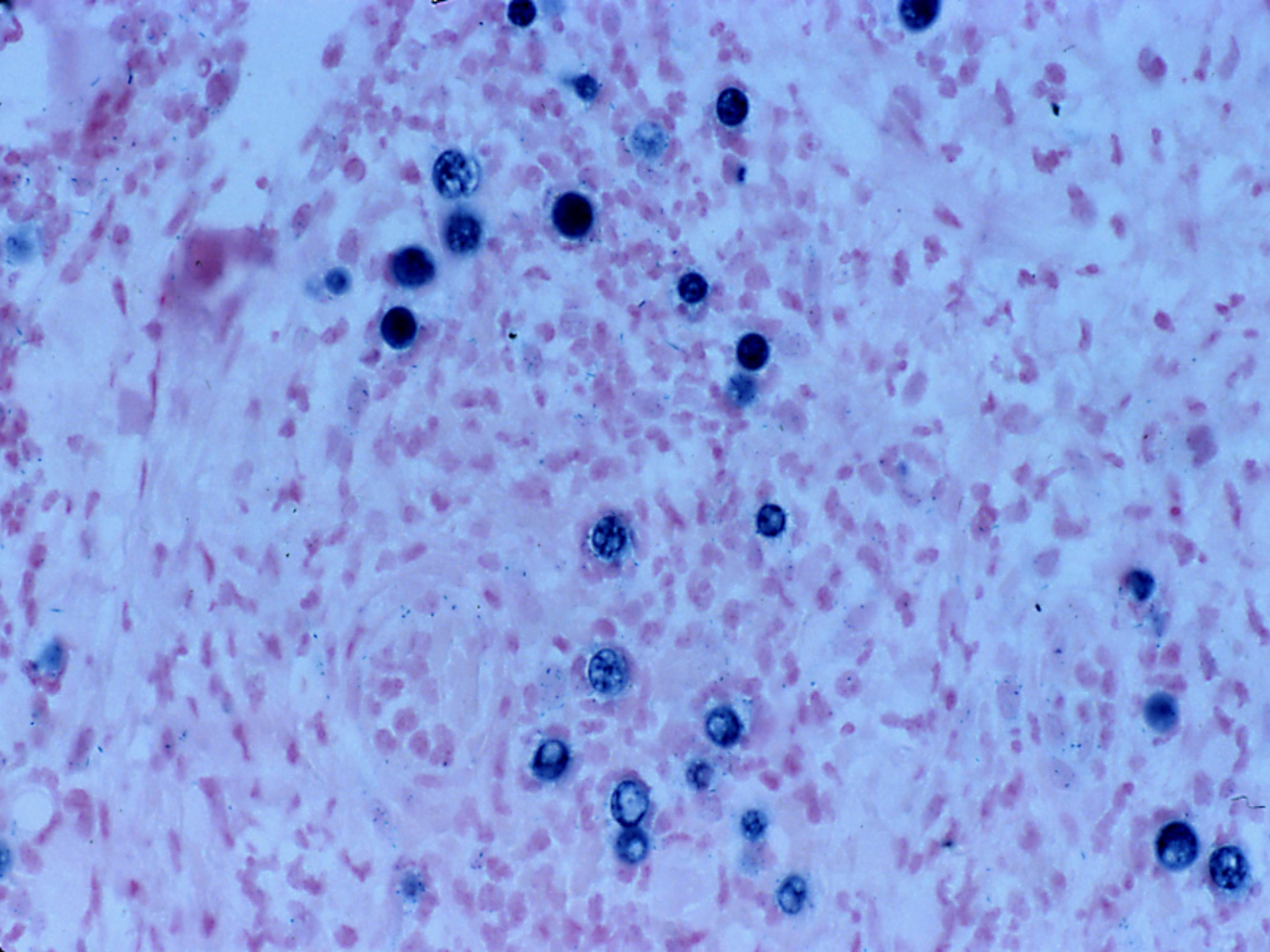
Yeast Forms

- Histoplasma
- Cryptococcus
- Coccidiodes
- Blastomyces

FUNGAL INFECTIONS

Filamentous Forms

- Candida
- Aspergillus
- Fusarium
- Pseudallescheria



Summary

- In situ hybridization very useful for morphological localization of nucleic acids in cells.
- For targets such as lncRNAs and microRNAs there are no alternatives for morphological localization.
- Can combine nucleic acid and protein localization for more in depth studies.

Acknowledgements

- **Chair of Pathology**
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