

Miljøprøvebanken—muligheter for analyse av biologiske effekter av miljøgifter

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biologiske effekter

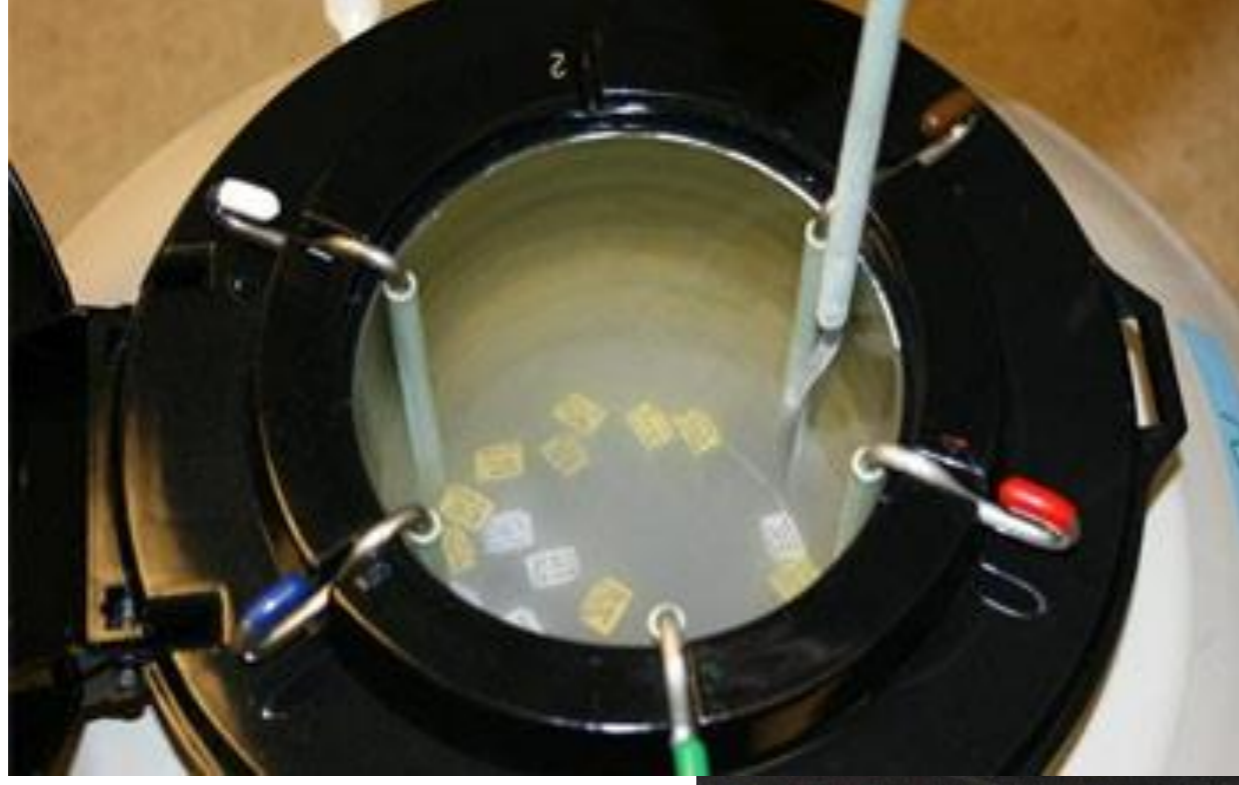
- kan måles på RNA, protein og metabolitt-nivå i vevsprøver
- ved bruk av omics-basert teknologi (transkriptomikk, proteomikk, metabolomikk)
- eller ved bruk av biokjemiske eller cellulære biomarkører (med metoder i stadig utvikling)

biologiske effekter

- måler effekt og ikke konsentrasjon(er)
- gir innsikt i mekanismer og sammenhenger mellom eksponering og effekt
- kan gi svar på blandings effekter og modulerte stressresponser som ikke kan forutsis ved bruk av grenseverdier for enkeltstoffer
- er «neste generasjon» overvåkingemetodikk

hva må til for at prøver fra miljødatbanken skal kunne brukes til biologisk effekt-måling?





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<http://www.hh.um.es>

**Histology and
Histopathology**

Cellular and Molecular Biology

Review

Excavation of a buried treasure – DNA, mRNA, miRNA and protein analysis in formalin fixed, paraffin embedded tissues

R. Klopfleisch, A.T.A. Weiss and A.D. Gruber

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Technical Advance

A High Frequency of Sequence Alterations Is Due to Formalin Fixation of Archival Specimens

Cecilia Williams,* Fredrik Pontén,[†] Catherine Moberg,[‡] Peter Söderkvist,[§] Mathias Uhlén,* Jan Pontén,[†] Gisela Sitbon,[‡] and Joakim Lundeberg*

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Table 1. Amplification Efficiency and Frequency of Artificial Mutations in Relation to Tissue Material and Number of Cells per Analysis

Tissue	No. of cells	Amplification	Bases sequenced	No. of artifacts	Frequency of artifacts (%)
Frozen	200	OK	3600	0	—
	64	OK	3600	0	—
	20	OK	3600	0	—
	10	OK	3600	0	—
Formalin fixed	300	OK	3600	0	—
	150	OK	3600	1	0.03
	80	OK	3600	3	0.08
	40	OK	4100	6	0.14
	20	Not exon 4	4300	9	0.2
	10	Not exon 4	4300	9	0.2

subsequent analysis have been published, and the results have been incorporated into databases. Use of the PCR has permitted the analysis of decreasing amounts of template, allowing genetic analysis of single cells in tissue sections.³ The use of amplification techniques makes the analysis vulnerable for several reasons. Randomly

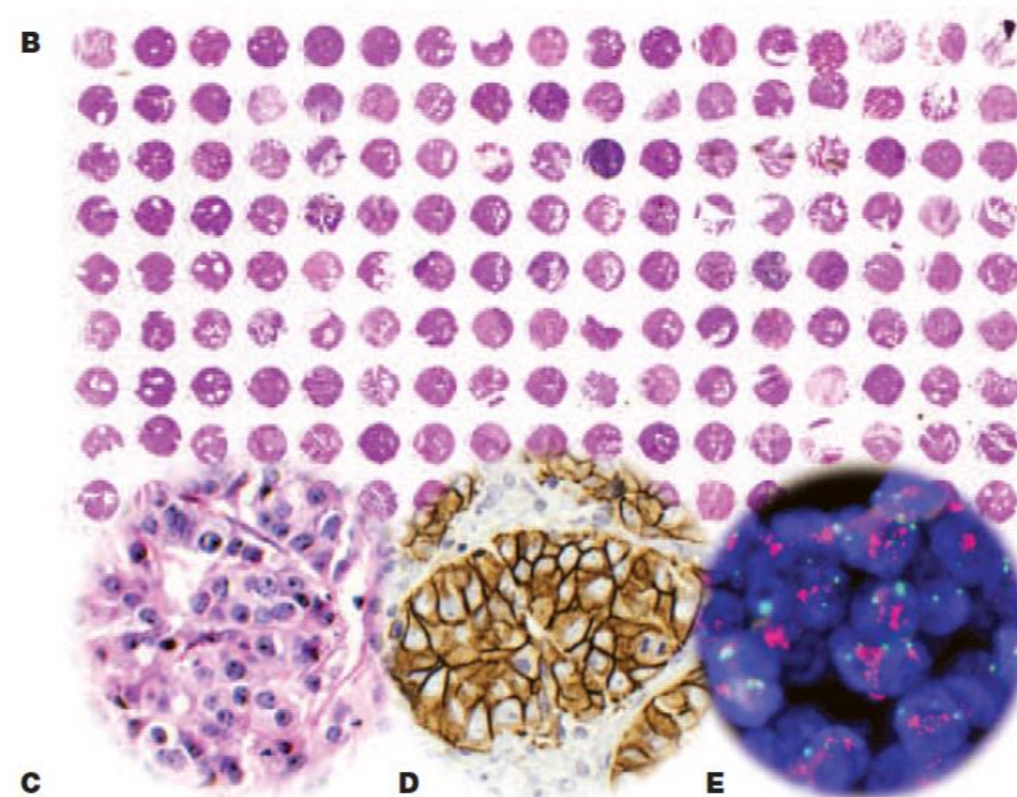
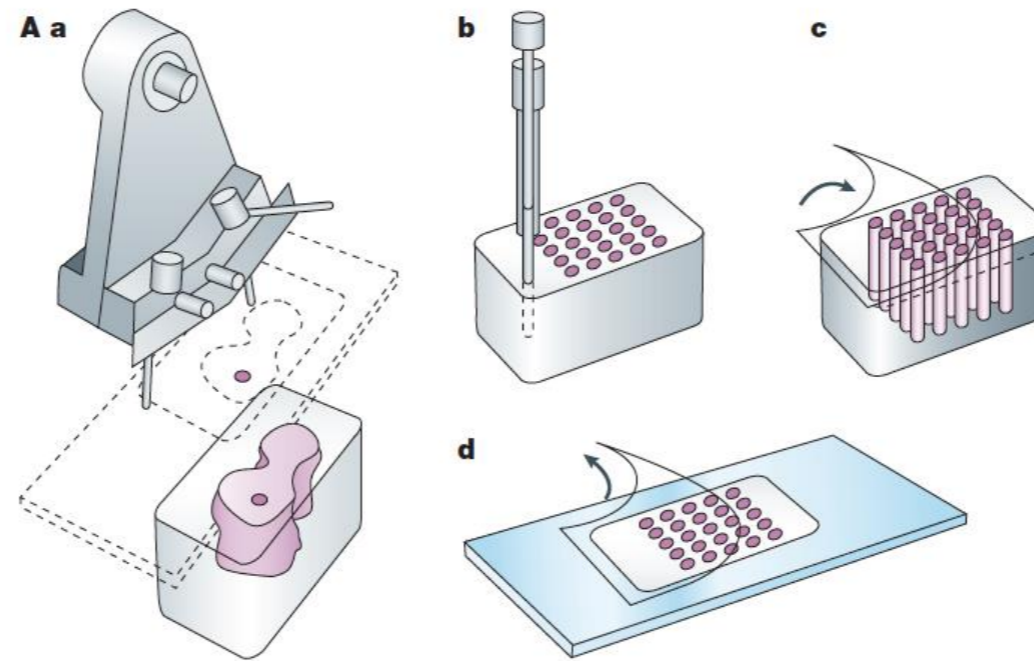
Systematic analysis of microRNA expression of RNA extracted from fresh frozen and formalin-fixed paraffin-embedded samples

Yaguang Xi, Go Nakajima, Elaine Gavin, et al.

RNA 2007 13: 1668-1674 originally published online August 13, 2007
Access the most recent version at doi:[10.1261/rna.642907](https://doi.org/10.1261/rna.642907)

In summary, in this study, we systematically investigated the miRNA expression profiles of FFPE samples with LNA-based miRNA array analysis. We concluded that the expression of miRNAs from FFPE samples was in good correlation with fresh frozen samples and that formalin fixation did not significantly alter the stability of the miRNAs. Profiling miRNAs using archived FFPE specimens is feasible, and it may hold great promise for biomarker and novel target discovery for cancer research and other diseases.

tissue microarrays



TISSUE MICROARRAYS IN
DRUG DISCOVERY

Guido Sauter, Ronald Simon* and Kenneth Hillan†*

Automated subcellular localization and quantification of protein expression in tissue microarrays

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Archived Formalin-Fixed Paraffin-Embedded (FFPE) Blocks: A Valuable Underexploited Resource for Extraction of DNA, RNA, and Protein

Theresa J. Kokkat, Miral S. Patel, Diane McGarvey, Virginia A. LiVolsi, and Zubair W. Baloch

Formalin-fixed paraffin-embedded (FFPE) material presents a readily available resource in the study of various biomarkers. There has been interest in whether the storage period has significant effect on the extracted macromolecules. Thus, in this study, we investigated if the storage period had an effect on the quantity/quality of the extracted nucleic acids and proteins. We systematically examined the quality/quantity of genomic DNA, total RNA, and total protein in the FFPE blocks of malignant tumors of lung, thyroid, and salivary gland that had been stored over several years. We show that there is no significant difference between macromolecules extracted from blocks stored over 11–12 years, 5–7 years, or 1–2 years in comparison to the current year blocks.

Effective DNA/RNA Co-Extraction for Analysis of MicroRNAs, mRNAs, and Genomic DNA from Formalin-Fixed Paraffin-Embedded Specimens

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ARTICLE

Protein Extraction of Formalin-fixed, Paraffin-embedded Tissue Enables Robust Proteomic Profiles by Mass Spectrometry

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hva må til for at prøver fra miljødatatabanken skal kunne brukes til biologisk effekt-måling?

- standardiserte prøvetakings- og prepareringsmetoder (fiksering/separasjon/nedfrysing)
- standardiserte lagringsbetingelser
- tilstrekkelig antall replikate prøver

