

# Circulating Histone Profiles Discriminate Heart Failure Patients With Preserved Versus Reduced Ejection Fraction

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## INTRODUCTION

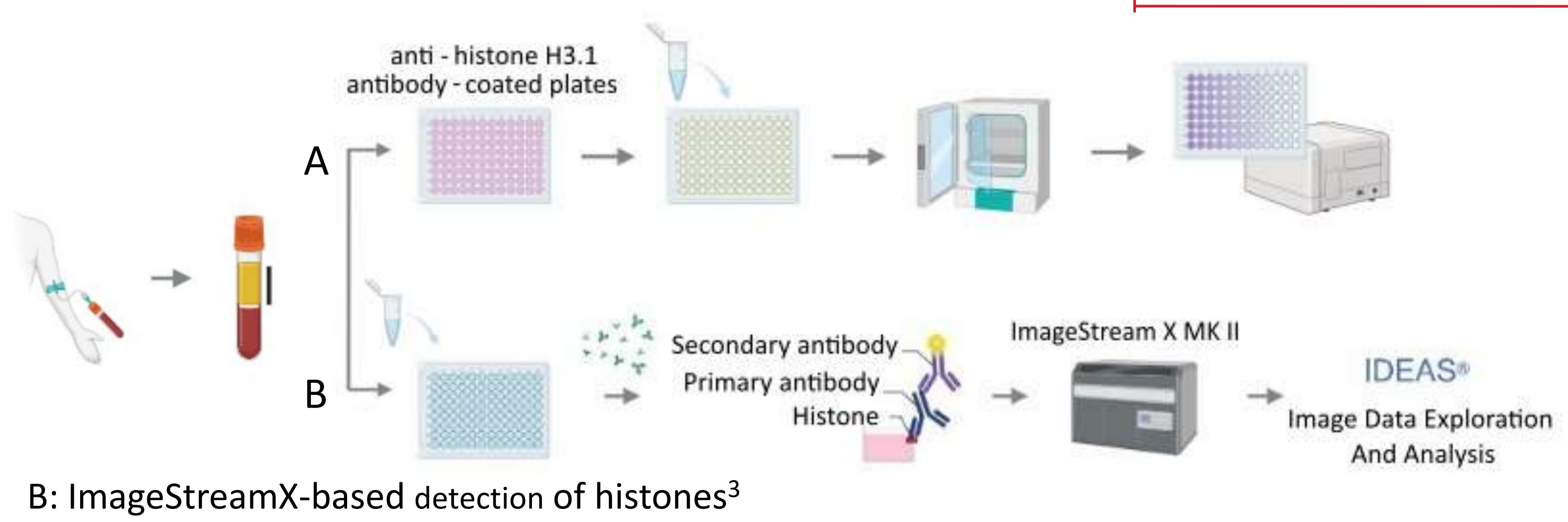
The diagnosis of heart failure (HF) with preserved left ventricle ejection fraction (HFpEF) remains a challenge, with score-based algorithms showing varying diagnostic performance. Furthermore, approximately 20% of the HFpEF patients do not show elevated levels of BNP and/or NT-proBNP above the detection threshold<sup>1</sup>, suggesting that single-marker detection approach might lack sensitivity and specificity.

## AIM

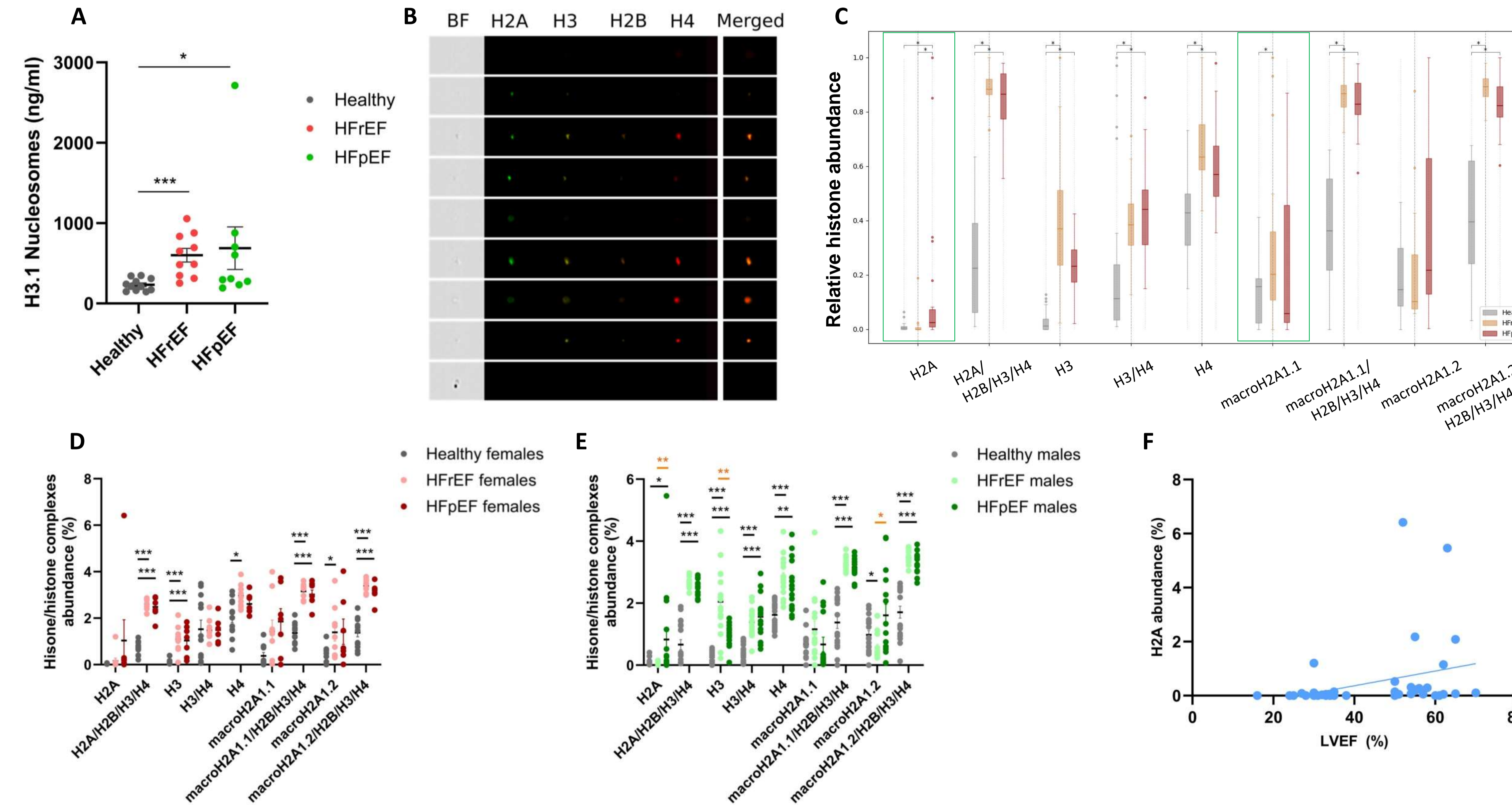
Examine whether circulating histones and histone complexes, which recently emerged as robust biomarkers of inflammation and stroke<sup>2</sup>, would show distinct profiles in plasma from healthy individuals, HF with reduced EF (HFrEF), and HFpEF patients.

## METHODS

Parameters	Healthy individuals N=30	HFpEF N=22	HFrEF N=25
Sex (M / F)	18 / 12	15 / 7	16 / 9
Age (years)	62 (46 – 82)	72.5 (49 – 89)	69.7 (47 – 89)
BMI (kg/m <sup>2</sup> )	26.0 (18.2 – 30.1)	29.8 (17.5 – 45.9)	30.0 (21.0 – 40.5)
LVEF (%)	—	57.4 (50 – 70)	31.0 (16.0 – 38.0)



## RESULTS



## LEGENDS

**A:** H3.1 nucleosomes in plasma of healthy individuals, HFrEF patients, and HFpEF patients.  
**B:** Representative images of ImageStreamX-based histone detection in plasma.  
**C:** Levels of histones and histone complexes in plasma of healthy individuals, HFrEF patients, and HFpEF patients.  
**D, E:** Levels of histones and histone complexes in plasma of **D) female and E) male** healthy individuals, HFrEF patients, and HFpEF patients.  
**F:** Correlation between plasma H2A levels and LVEF.

## CONCLUSIONS

- H3.1 nucleosomes** are drastically increased in **HF patients**, compared to healthy individuals, but **lack specificity** in differentiating **HFpEF from HFrEF**.
- Distinct plasma histone signature** in **HFpEF patients, HFrEF patients, and healthy individuals**, specifically in male HF patients.
- Histone signature** suggests a strong value as a **novel biomarker in HF**.

## REFERENCES

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## COMPETING INTERESTS

Medical University - Varna has a pending patent application related to the work reported herein, in which D.K.T., M.V., A.K., and Y.Y. are listed as co-inventors. All other authors declare that they have no competing interests.

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