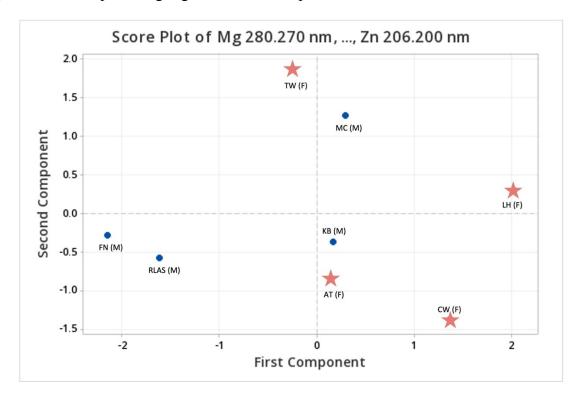
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## **Supplementary Information**

Validation and Expansion of Sex Determination Method Through Analysis of Human Hair Using Electrothermal Vaporization Coupled to Inductively Coupled Plasma Optical Emission Spectrometry

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Fig. S1 PCA score plot using Mg, S, Sr, and Zn as predictors. Red stars: female, blue circles: male.



**Table S1** Predictions by LDA for the eight samples used as the statistical model with Mg, S, Sr, and Zn as predictor elements.

Sample	Known Group	Probabilities		Predicted Group	
TW	Female	Male	0.000	Female	
1 VV		Female	1.000	remale	
LH	Female	Male	0.000	Female	
LII	remate	Female	1.000	remale	
CW	Female	Male	0.000	Female	
Cvv	remate	Female	1.000	remate	
A 75	Female	Male	0.000	Female	
AT		Female	1.000	remaie	
ENI	Male	Male	1.000	Male	
FN		Female	0.000	Male	
ИD	Male	Male	1.000	Male	
KB		Female	0.000	Male	
RLAS	Male	Male	1.000	Male	
		Female	1.000	Male	
MS	Male	Male	1.000	M-1-	
		Female	0.000	Male	

**Table S2** Predictions by LDA for the 11 dyed hair samples, with undyed samples used as the statistical model with Mg, S, Sr, and Zn as predictor elements.

Sample	Known Group	Probabilities		Predicted Group
AM	Female	Male	0.000	Eamala
AM		Female	1.000	Female
IT	Female	Male	0.000	E-m-1-
JT		Female	1.000	Female
TH	Female	Male	0.000	Female
IП	remaie	Female	1.000	remaie
CII	Female	Male	0.000	Female
SU	remaie	Female	1.000	remaie
DC	Female	Male	0.000	Female
BS		Female	1.000	remaie
EM	Female	Male	0.000	Female
EV		Female	1.000	remale
LN	Female	Male	0.000	Female
LIN		Female	1.000	remaie
MM	Female	Male	0.000	Female
IVIIVI	remaie	Female	1.000	remaie
A NI	Male	Male	0.000	Female
AN	Maie	Female	1.000	remaie
AC	Mala	Male	0.000	Female
AC	Male	Female	1.000	remale
DП	Male	Male	0.000	Female
DH		Female	1.000	remaie

**Table S3** Predictions by LDA for both dyed and undyed hair samples, with dyed female samples and undyed male samples in the training set, using Mg, S, Sr, and Zn as predictor elements.

Sample	Known Group	Dyed?	Probab	ilities	Predicted Group
TW	Female	Undvad	Male	0.997	Male
1 W	remale	Undyed	Female	0.003	Maie
LH	Female	Undyed	Male	0.922	Male
LH	Tennale	Ollayea	Female	0.078	Maic
CW	Female	Undyed	Male	0.002	Female
CVV	Tentale	Ollayea	Female	0.998	Temate
AT	Female	Undyed	Male	0.962	Male
AI	Tentale	Ollayea	Female	0.038	Iviaic
SPN2	Male	Undyed	Male	0.998	Male
51112	Maic	Ollayea	Female	0.002	Maic
BS	Female	Dyed	Male	0.075	Female
	1 cmaic	Dycu	Female	0.925	1 Ciliaic
EV	Female	Dyed	Male	0.000	Female
L v		Dyca	Female	1.000	1 cmarc
LN	Female	Dyed	Male	0.019	Female
LIV	Temate	Dyca	Female	0.981	Temate
MM	Female	Dyed	Male	0.088	Female
IVIIVI	1 cmarc	Dyca	Female	0.912	1 cmaic
AN	Male	Dyed	Male	0.028	Female
1111	Maic	Dyca	Female	0.972	Temate
AC	Male	Dyed	Male	0.164	Female
	Maic	Dyca	Female	0.936	1 cmarc
DH	Male	Dyed	Male	0.000	Female
ווע	Maic	Dyca	Female	1.000	1 Ciliaic

**Table S4** Predictions by LDA for both dyed and undyed hair samples, with only dyed samples in the training set with Mg, S, Sr, and Zn as predictor elements.

Sample	Known Group	Dyed?	Probab	ilities	Predicted Group
BS	Female	Dyed	Male	0.000	Female
ЪЗ	Telliale	Dycu	Female	1.000	Telliale
EV	Female	Dyed	Male	1.000	Male
L	1 cinaic	Dyca	Female	0.000	Marc
LN	Female	Dyed	Male	0.000	Female
21,	1 omaio	D y Cu	Female	1.000	1 onition
MM	Female	Dyed	Male	0.000	Female
1,11,1	1 0111111	2700	Female	1.000	1 01110110
DH	Male	Dyed	Male	0.000	Female
		_ 3	Female	1.000	
TW	Female	Undyed	Male	0.000	Female
		)	Female	1.000	
LH	Female	Undyed	Male	0.000	Female
		,	Female	1.000	
$\mathbf{C}\mathbf{W}$	Female	Undyed	Male	0.000	Female
		,	Female	1.000	
AT	Female	Undyed	Male	0.000	Female
		,	Female	1.000	
FN	Male	Undyed	Male	0.000	Female
		,	Female	1.000	
KB	Male	Undyed	Male	0.000	Female
		,	Female	1.000	
RLAS	Male	Undyed	Male	0.000	Female
		,	Female	1.000	
MS	Male	Undyed	Male	0.000	Female
	111410	J	Female	1.000	

**Table S5** Predictions by LDA for the eight samples used as the statistical model with Cd, Ce, Fe, and Sn as predictor elements.

Sample	Known Group	Probabilities		Predicted Group	
TW	Female	Male	0.000	Female	
1 VV	remaie	Female	1.000	remate	
LH	Female	Male	0.000	Female	
LII	Pelliale	Female	1.000	remate	
CW	Female	Male	0.000	Female	
CVV	remaie	Female	1.000	remale	
AT	Female	Male	0.000	Female	
		Female	1.000	remale	
FN	Male	Male	1.000	Male	
ΓIN		Female	0.000	Male	
KB	Male	Male	1.000	Male	
ND		Female	0.000	Male	
RLAS	Male	Male	1.000	Male	
		Female	0.000	Maic	
MS	Male	Male	1.000	Male	
		Female	0.000	Maie	

**Table S6** Predictions by LDA for the 11 dyed hair samples, with undyed samples used as the statistical model with Cd, Ce, Fe, and Sn as predictor elements.

Sample	Known Group	Probabilities		Predicted Group
AM	Female	Male	0.000	Female
AM		Female	1.000	remaie
JT	F 1 -	Male	0.000	Female
JI	Female	Female	1.000	remale
TH	Female	Male	0.000	Female
П	remale	Female	1.000	remale
SU	Female	Male	0.000	Female
30	remaie	Female	1.000	remaie
BS	Female	Male	0.000	Female
ВЗ		Female	1.000	remale
EM	Female	Male	0.000	Female
EV		Female	1.000	remale
LN	Female	Male	0.000	Female
LIN		Female	1.000	Tennate
MM	Female	Male	0.000	Female
1 <b>V11V1</b>	remale	Female	1.000	remale
AN	Male	Male	1.000	Male
	Maie	Female	0.000	Male
AC	Male	Male	1.000	Male
	iviale	Female	0.000	Male
DП	Male	Male	1.000	Male
DH		Female	0.000	Maic

**Table S7** LDA classification of samples belonging to close family groups, both with and without the inclusion of close family members in the training set, using Cd, Ce, Fe, and Sn as predictor elements.

Family	Sample	Known Group	Inclusion of family members in model?	Probabilities		Predicted Group
	MT	Female	No	Male Female	0.000 1.000	Female
	AT	Female	No	Male Female	0.000 1.000	Female
1	MT	Female	Yes	Male Female	0.000 1.000	Female
	AT	Female	Yes	Male Female	0.000 1.000	Female
2	MC	Male	No	Male Female	1.000	Male
	CC	Female	No	Male Female	0.000 0.000 1.000	Female
	RS	Female	No	Male Female	0.000 1.000	Female
	MC	Male	Yes	Male Female	1.000	Male
	CC	Female	Yes	Male Female	0.826 0.174	Male
	RS	Female	Yes	Male Female	0.000 1.000	Female