



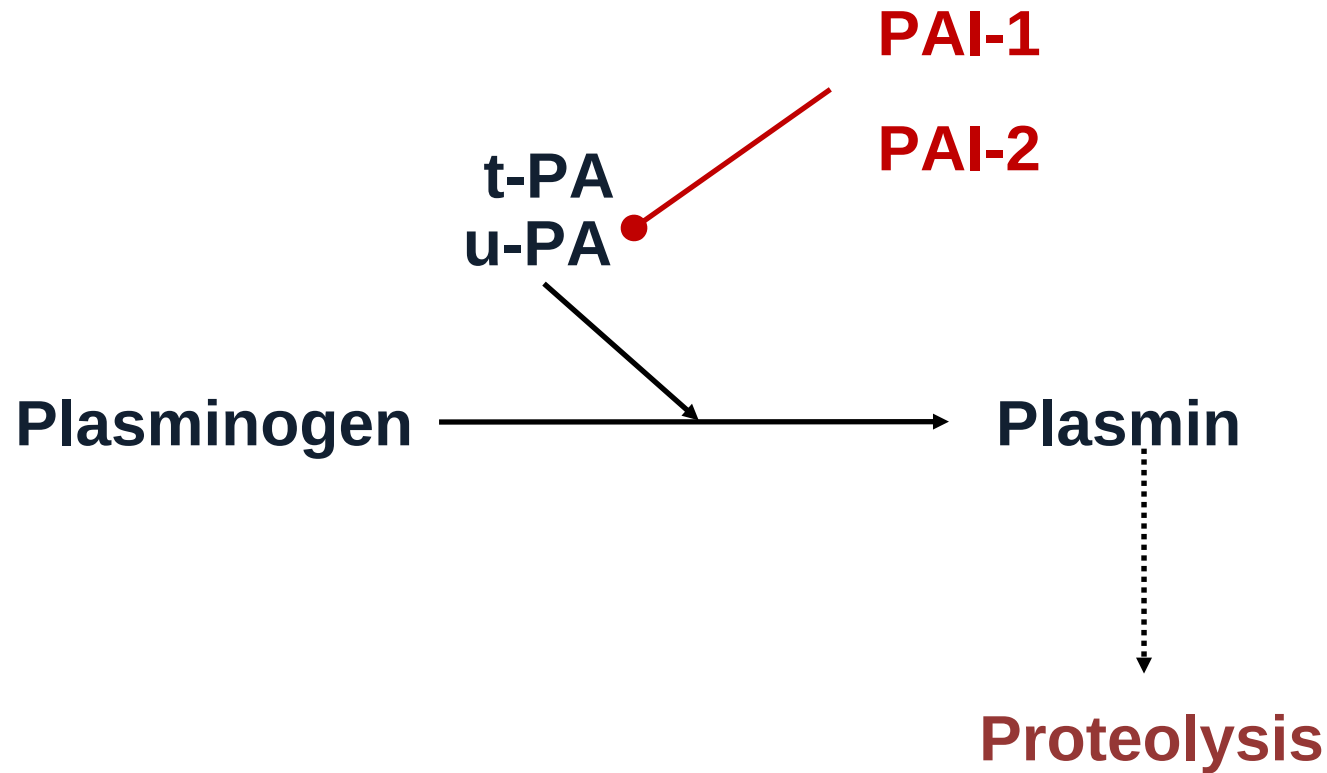
UPREGULATION OF PLASMINOGEN ACTIVATOR- RELATED GENES IN OVINE MACROPHAGES AND NEUTROPHILS DURING MASTITIS

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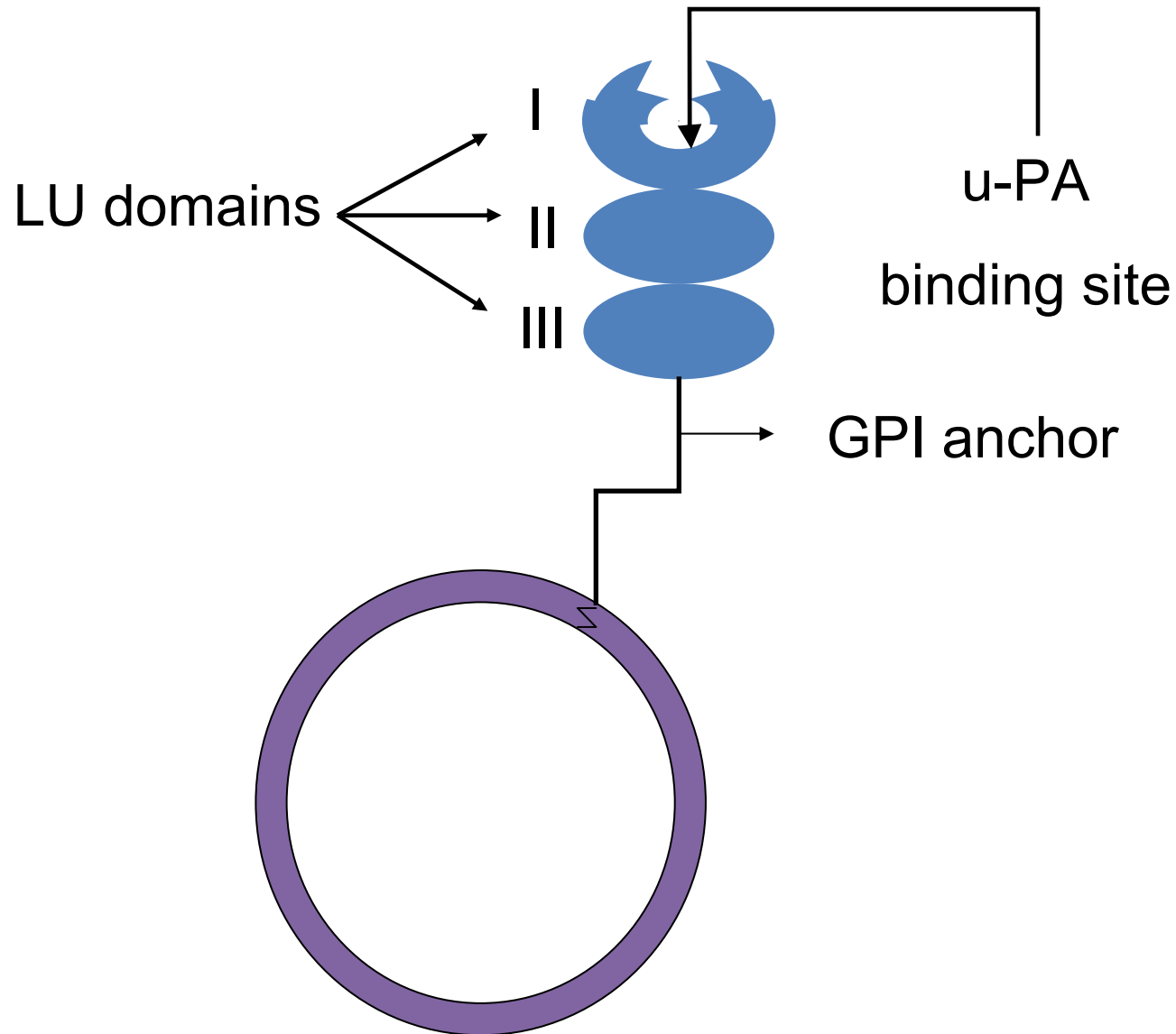
Plasminogen Activation System



u-PA = Urokinase Plasminogen Activator

PAI-1, PAI-2 = Plasminogen Activator Inhibitors

Urokinase Plasminogen Activator Receptor (u-PAR)



Cloning of ovine PA-related cDNAs

Four PA – related genes were recently cloned and fully characterized by our group

- u-PA, u-PAR → implicated in the activation of the system
- PAI-1, PAI-2 → implicated in the inhibition of the system

Objectives

- ◉ Examine expression of four PA – related genes (u-PA, u-PAR, PAI-1 and PAI-2) in ovine monocytes and neutrophils
- ◉ Determine whether differences in expression of these genes occur between phagocytic cells obtained from healthy and mastitic ewes

Materials and Methods

◉ Animals and sampling

- 16 ewes: 8 healthy and 8 mastitic
- Breeds used: Chios, Boutsiko and a synthetic breed (50% Boutsiko, 25%Chios, 25% Arta)
- Weekly individual milk and blood samples for a period of 3 weeks from all animals

Analytical work

◉ Expression analysis

- Isolation of blood monocytes and neutrophils followed by RNA extraction and Real-Time PCR

◉ Analysis of milk samples

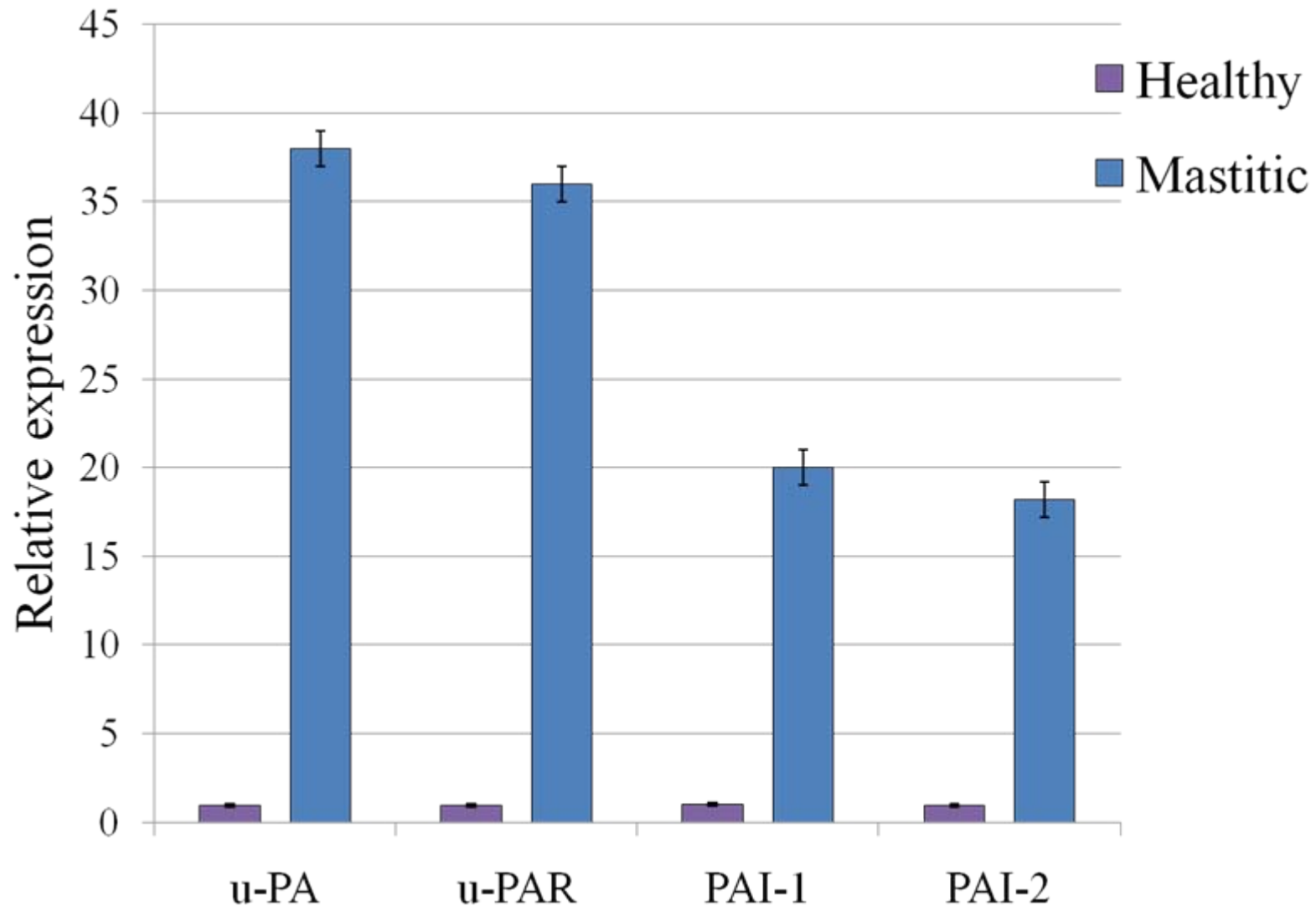
- Somatic cell count
- Bacteria levels

RESULTS

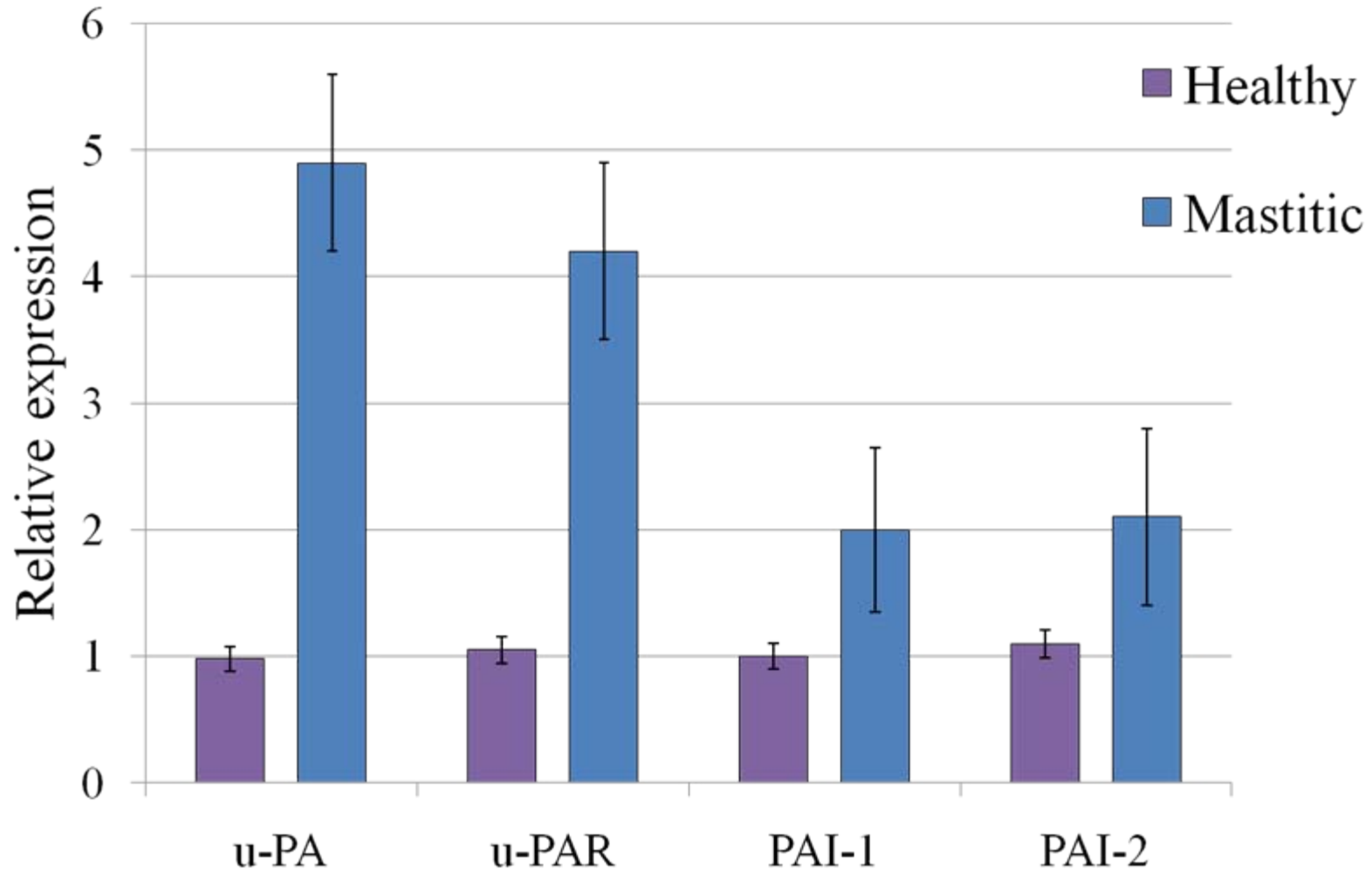
Effect of health status of the udder on SCC and bacteria counts in ovine milk (Means $\pm$ SEM)

	Healthy group	Mastitic group
$\log_{10}$ SCC	1.85 ± 0.17^a	3.11 ± 0.26^b
Bacteria counts/ml ($\times 10^3$)	87.9 ± 13.14^a	314.9 ± 76.40^b

Expression of PA-related genes by neutrophils



Expression of PA-related genes by monocytes



Conclusions

- ◉ All four PA – related genes are concurrently expressed in neutrophils and monocytes of healthy and mastitic ewes. Expression of PAI-1 and PAI-2 by phagocytic cells is a novel observation
- ◉ All PA – related genes are upregulated during mastitis
- ◉ Upregulation is higher in u-PA and u-PAR when compared to that observed for PAI-1 and PAI-2

Thank you for your attention