Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis & Regeneration

MEDIZINISCHE UNIVERSITÄT WIEN

Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma

C. Nikolowsky

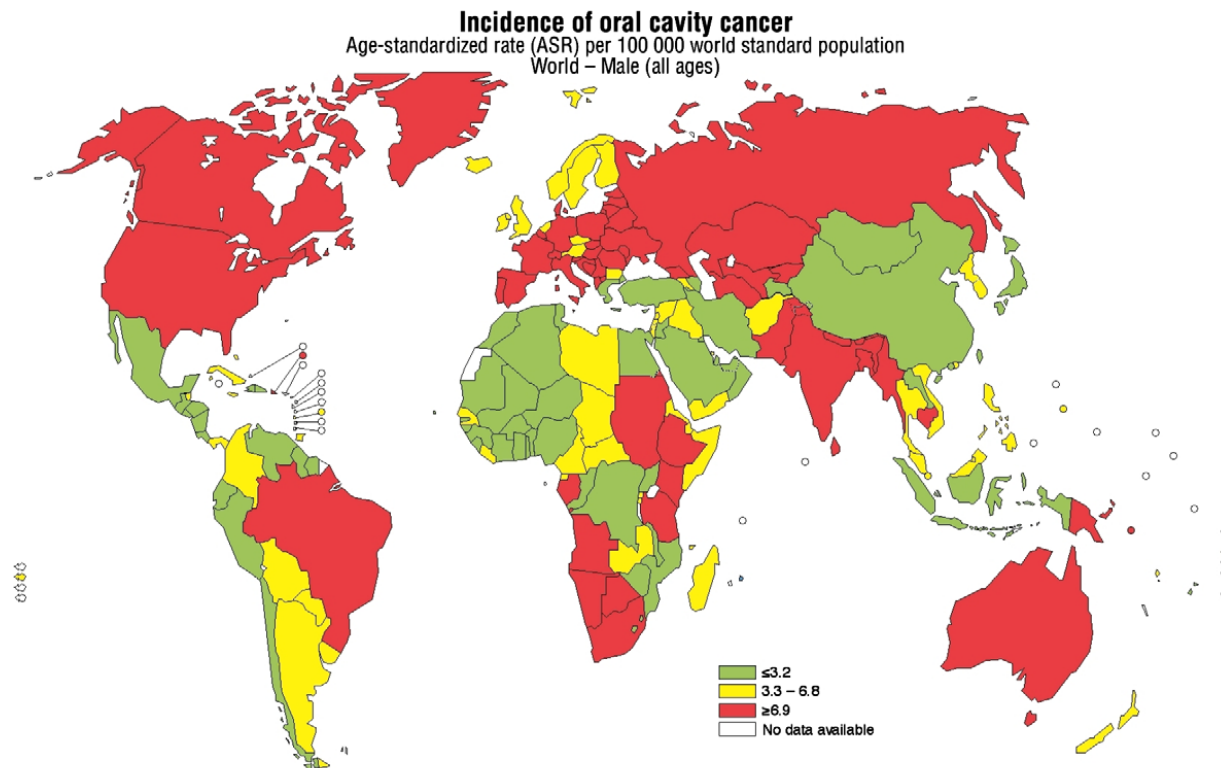Christian Doppler Laboratory for Cardiac and Thoracic Diagnosis and Regeneration

Medical University Vienna

Overview

- **Background (5)**
- Methods (2)
- Results (9)
- Conclusion and Discussion (2)

Background

Oro-pharyngeal cancer (males)

Petersen PE, Oral cancer prevention and control – The approach of the World ..., Oral Oncol (2008)

Background

Oro-pharyngeal cancer (females)

Incidence of oral cavity cancer
Age-standardized rate (ASR) per 100 000 world standard population
World – Female (all ages)
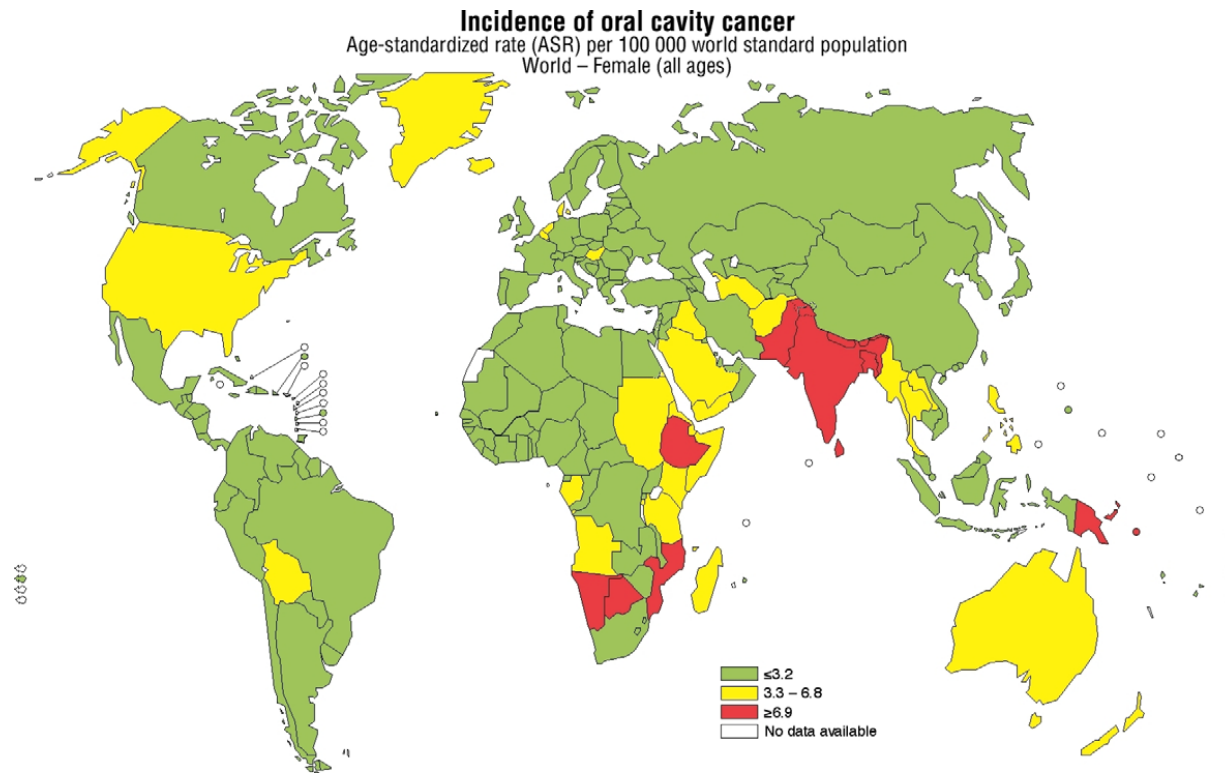
≤3.2
3.3 – 6.8
≥6.9
No data available

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WHO 04.276

Petersen PE, Oral cancer prevention and control – The approach of the World ..., Oral Oncol (2008)
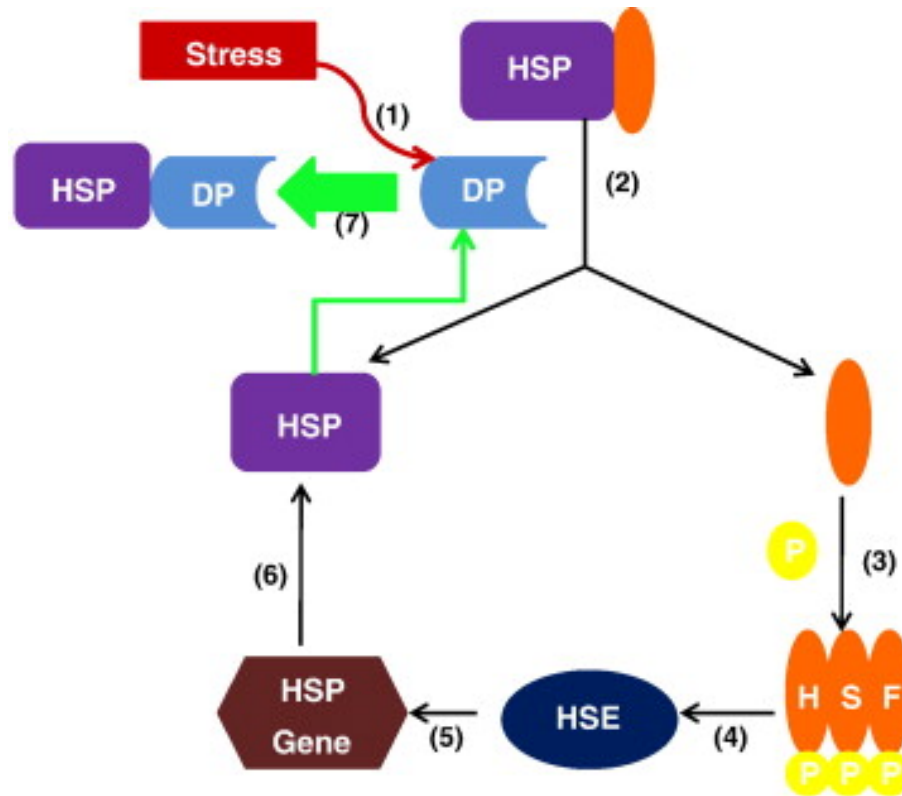
Background

Oral squamous cell carcinoma

– 5-year survival rate >50%

– risk factors: alcohol, tobacco

– Oral tongue SCC: 40% of all OSCC

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Background

Heat shock proteins

Khalil AA et al, Heat shock proteins in oncology: Diagnostic biomarkers
or therapeutic targets? , Biochim Biophys Acta 2011 Dec

Background

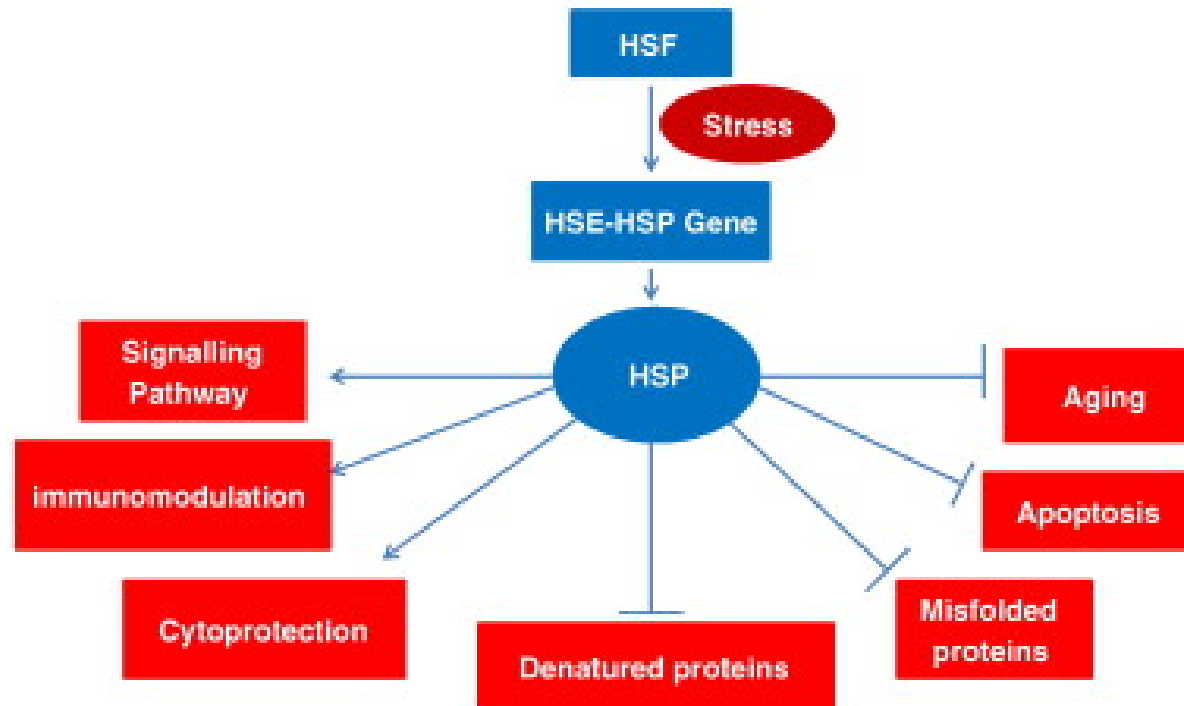## Heat shock proteins

Khalil AA et al, Heat shock proteins in oncology: Diagnostic biomarkers or therapeutic targets? , Biochim Biophys Acta 2011 Dec

Background

Heat shock protein 27

- increased expression in many types of cancers
- tumorgenic potential in vitro
- increase resistance to cytostatic anticancer drugs (e.g. cisplatin, vincristine, colchicine) and radiation therapy

Overview

- Background

- **Methods (2)**

- Results

- Conclusion and Discussion

Methods

Patients and tissues

- 80 cases of primary OTSCC (42 with follow-up data)

- 31 dysplastic lesions

- 15 normal tongue biospies

- All patients received curative surgery

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009
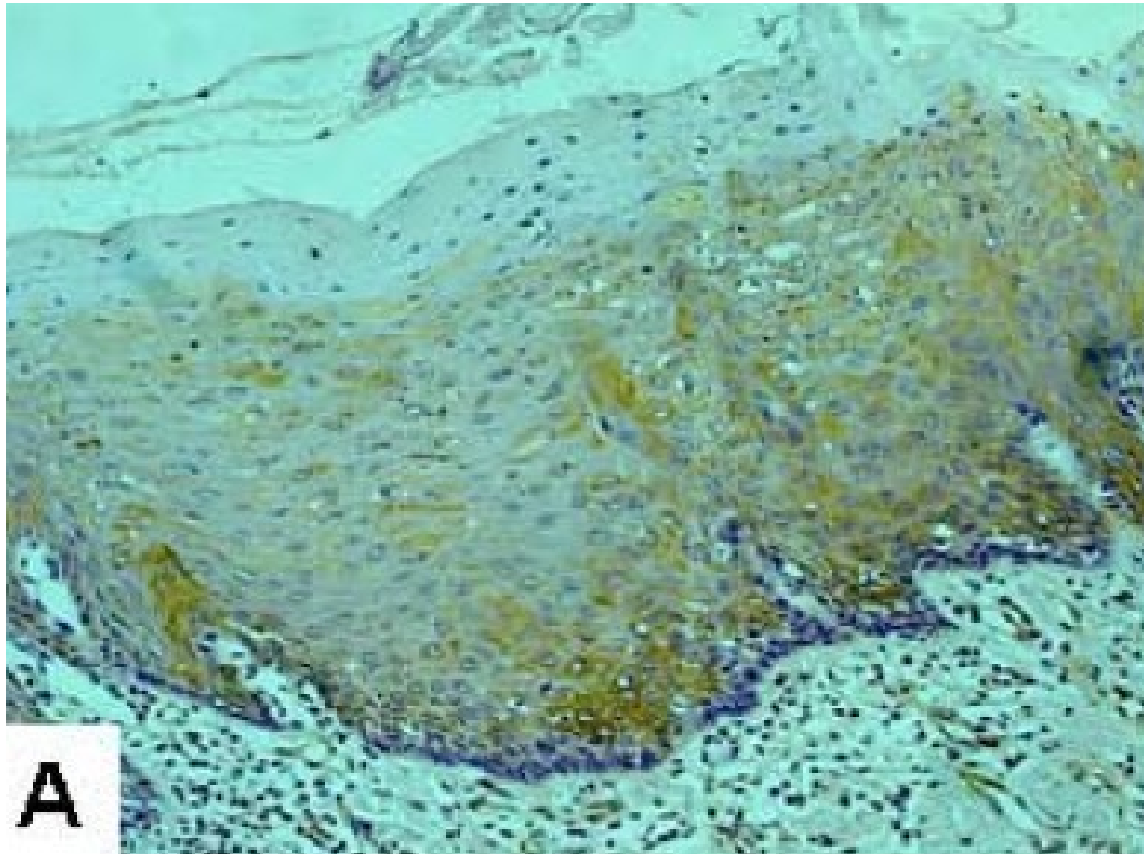
Methods

Immunohistochemical analysis

- HSP27 and Ki67

- light microscopy for evaluation of relative intensity

- absolute intensity was measured on a scale from 0-3 (no, low, moderate and high staining) in 10 random high power fields

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Overview

- Background

- Methods

- **Results (9)**

- Conclusion and Discussion

Results

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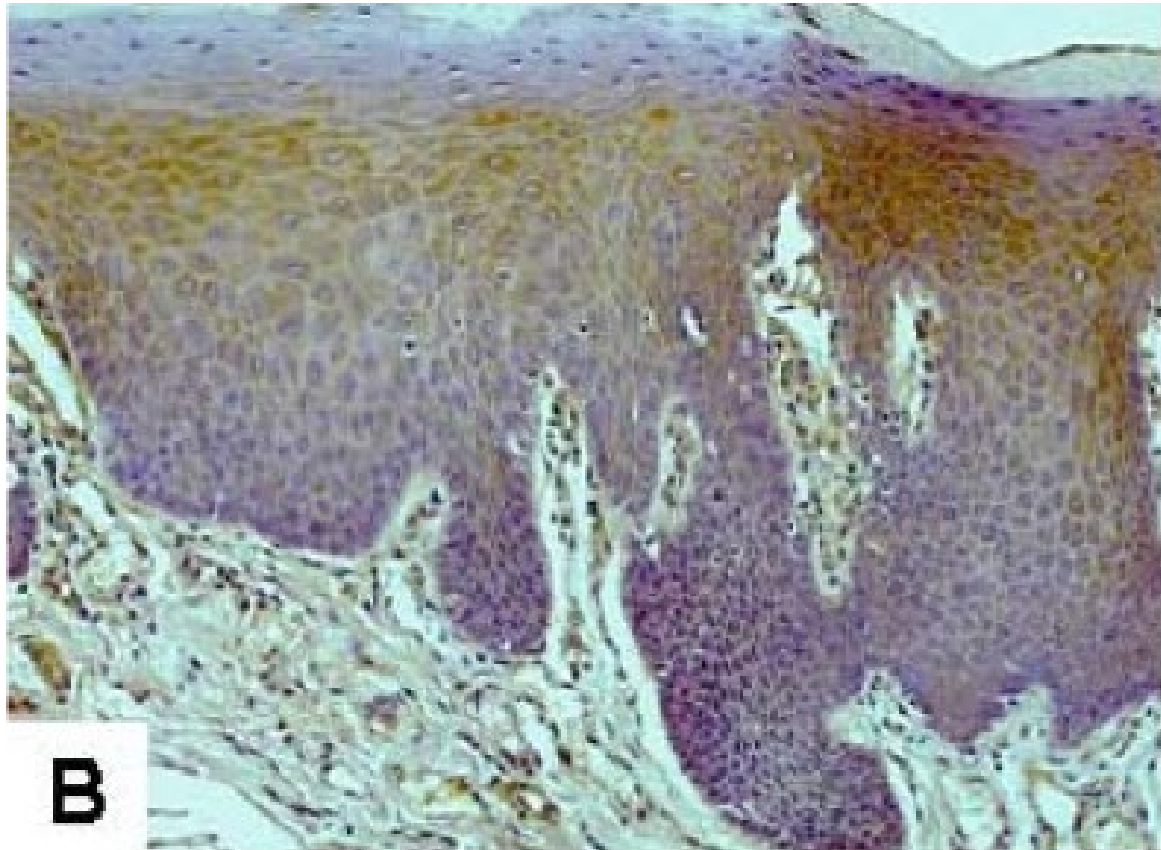UNIVERSITÄT
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Normal tongue mucosa

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009
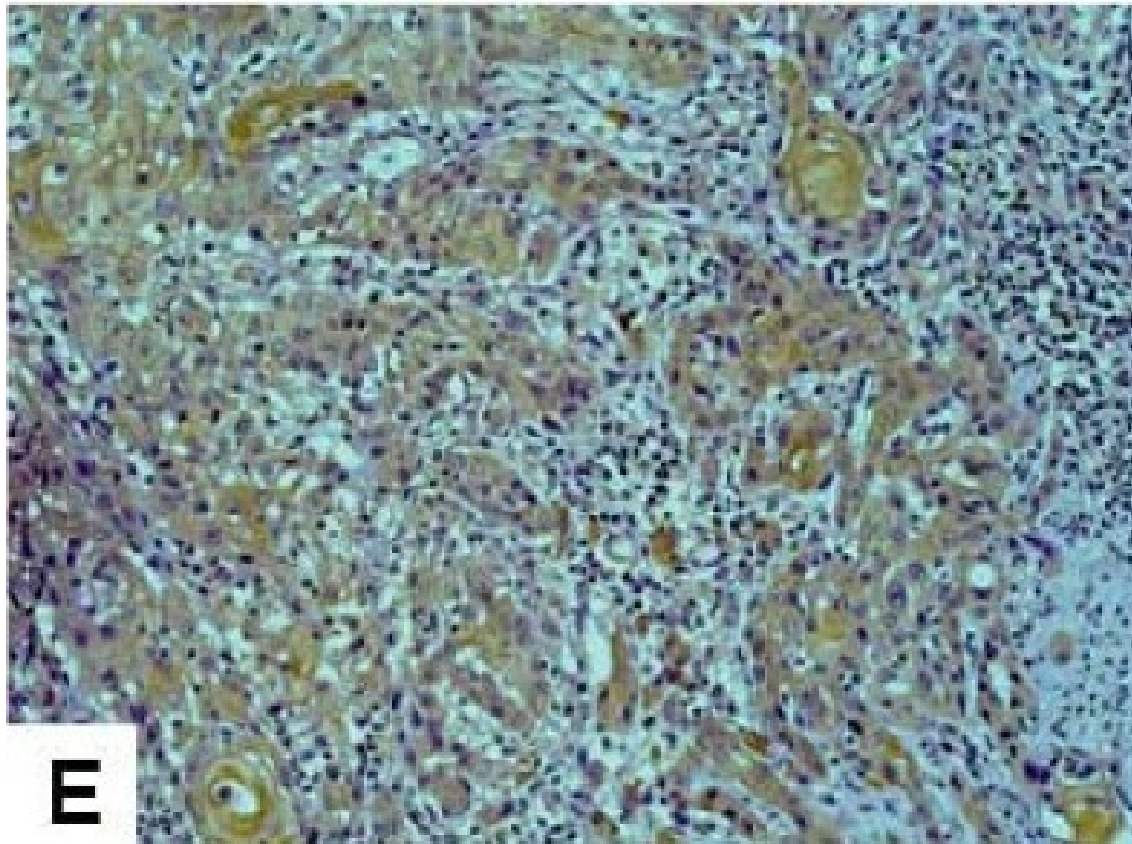
Results

Dysplastic lesions

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Results

Poorly differentiated OTSCC

E

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Results

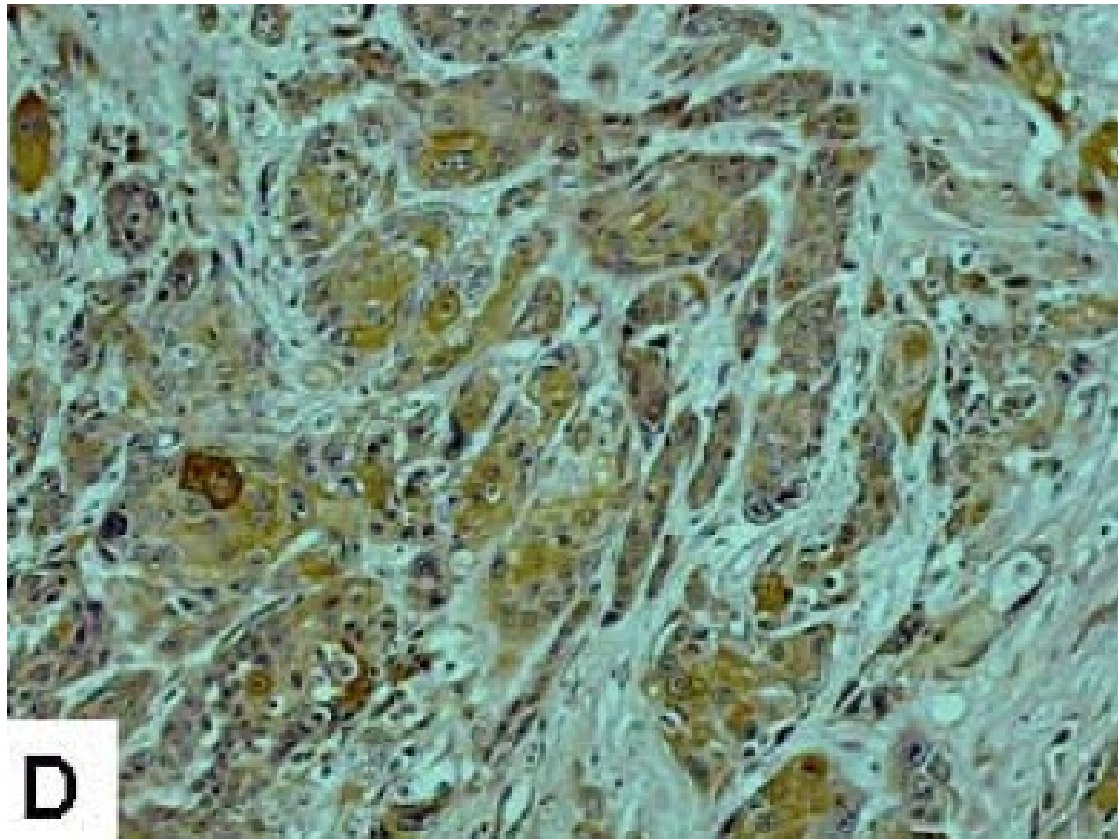## Moderately differentiated OTSCC

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Results

Well differentiated OTSCC

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009
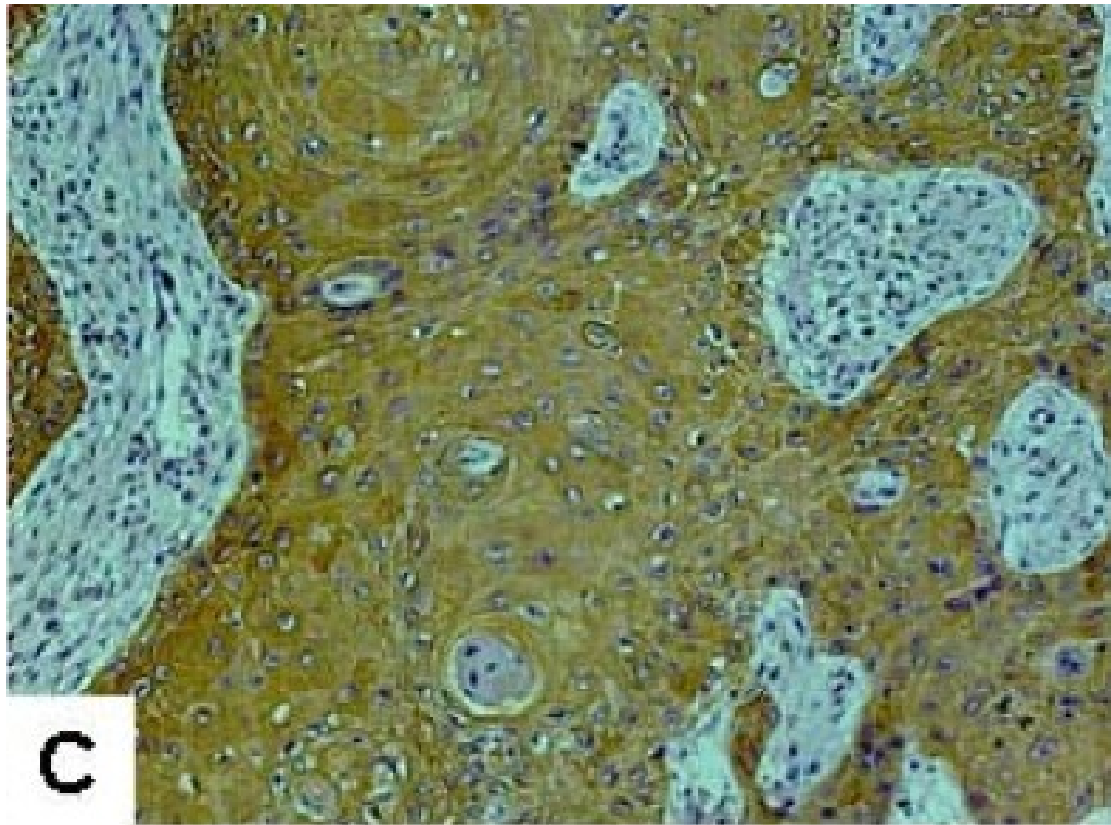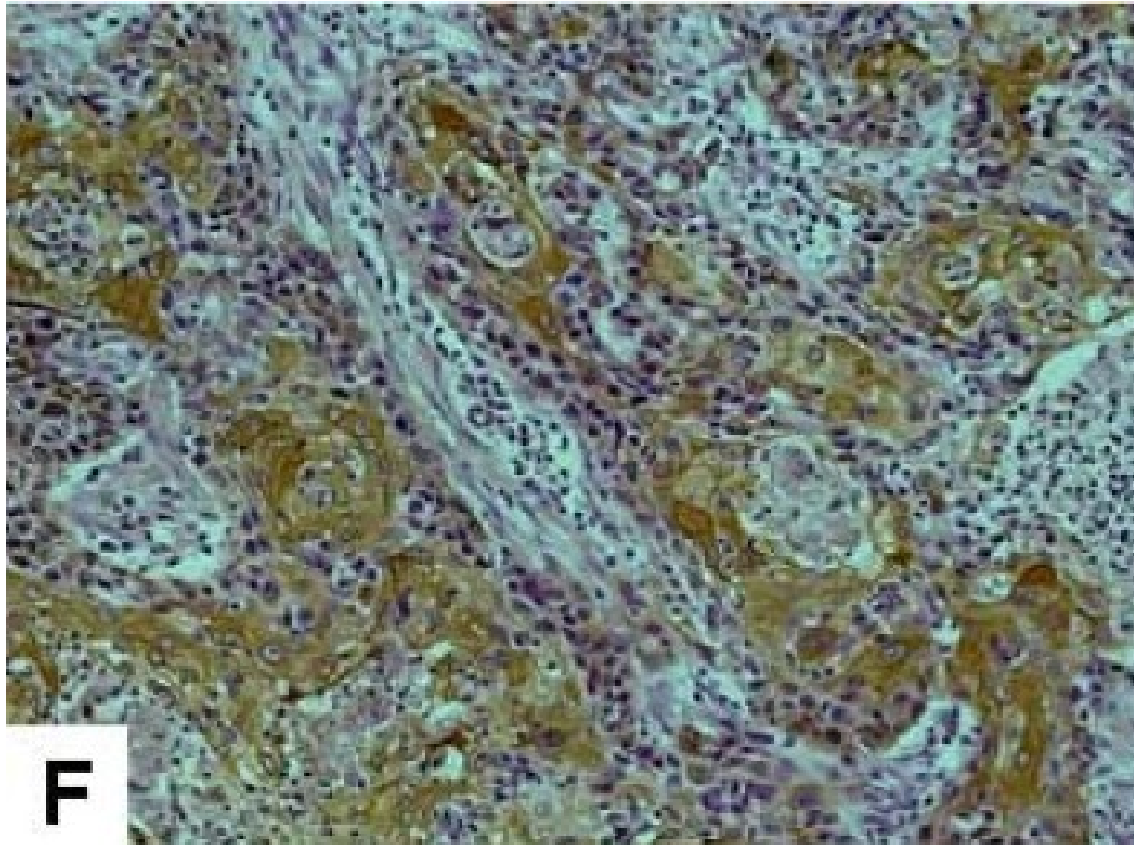
Results

Lymph node metastasis

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Results

Correlations among clinical and histopathological features of primary OTSCC*

	Age	Gender	pT stage	pN stage	C stage	Grade	Ki67	Hsp27
Age		0.01	-0.04	-0.13	-0.06	-0.10	0.18	0.26 **
Gender			0.12	0.04	0.12	0.00	0.07	-0.03
pT stage				0.44 ***	0.81 ***	-0.14	-0.14	0.00
pN stage					0.78 ***	0.06	-0.03	0.16
C stage						-0.01	-0.07	0.06
Grade							0.23 **	-0.29 ***
Ki67								0.04
Hsp27								

*Spearman Correlation Coefficients were presented. pT: pathological T-stage; pN: pathological N-stage.

** p < 0.05

*** p < 0.01

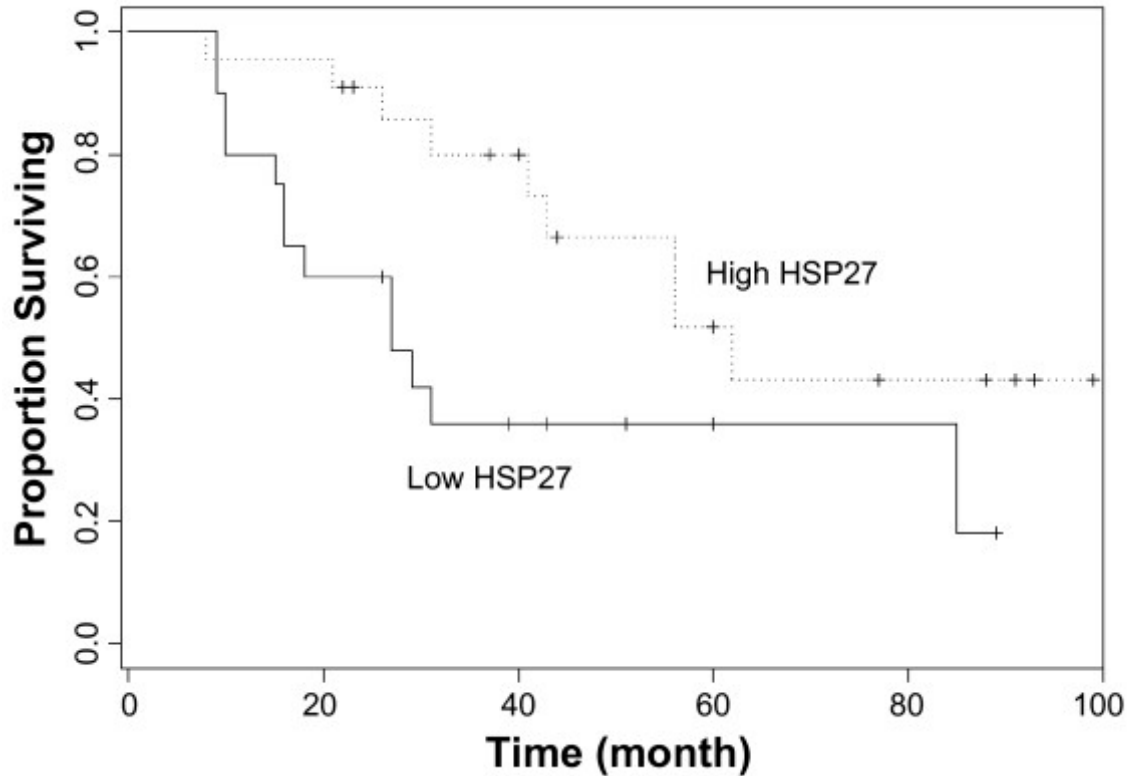Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Vienna 2012

Results

Association of Hsp27 expression and Ki67 index with differentiation*

		Hsp27 (IHC)		Ki67 index	
	n	Average	Variance	Average	Variance
Well	46	1.90	0.45	0.225	0.019
Moderately	20	1.74	0.47	0.302	0.025
Poorly	14	1.34	0.39	0.316	0.040
			$(p = 0.025872)$		$(p = 0.061275)$

*One-way ANOVA was used to assess the association of Hsp27 and Ki67 with grading.

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Results

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Overview

- Background
- Methods
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- **Conclusion and Discussion (2)**

Conclusion

- Dysregulation of HSP27 expression increases with progression of OTSCC

- HSP27 expression associated with differentiation

- Relevance of correlation between HSP27 expression and age not clear at the moment

- increased expression correlates with overall survival rate

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

Discussion

- prognostic significance not clear
  - affected site
  - heterogenity in oncogenic pathways
- other tumor types
  - good prognosis in NSCLC, endometrical adenocarcinoma
  - poor prognosis in gastric, liver and prostate carcinoma

Wang et al, Dysregulation of heat shock protein 27 expression in oral tongue squamous cell carcinoma, BMC Cancer 2009

The End

Thank you for your attention.