

# 31-Gene Expression Profiling for Cutaneous Melanoma: A Single-Center Study

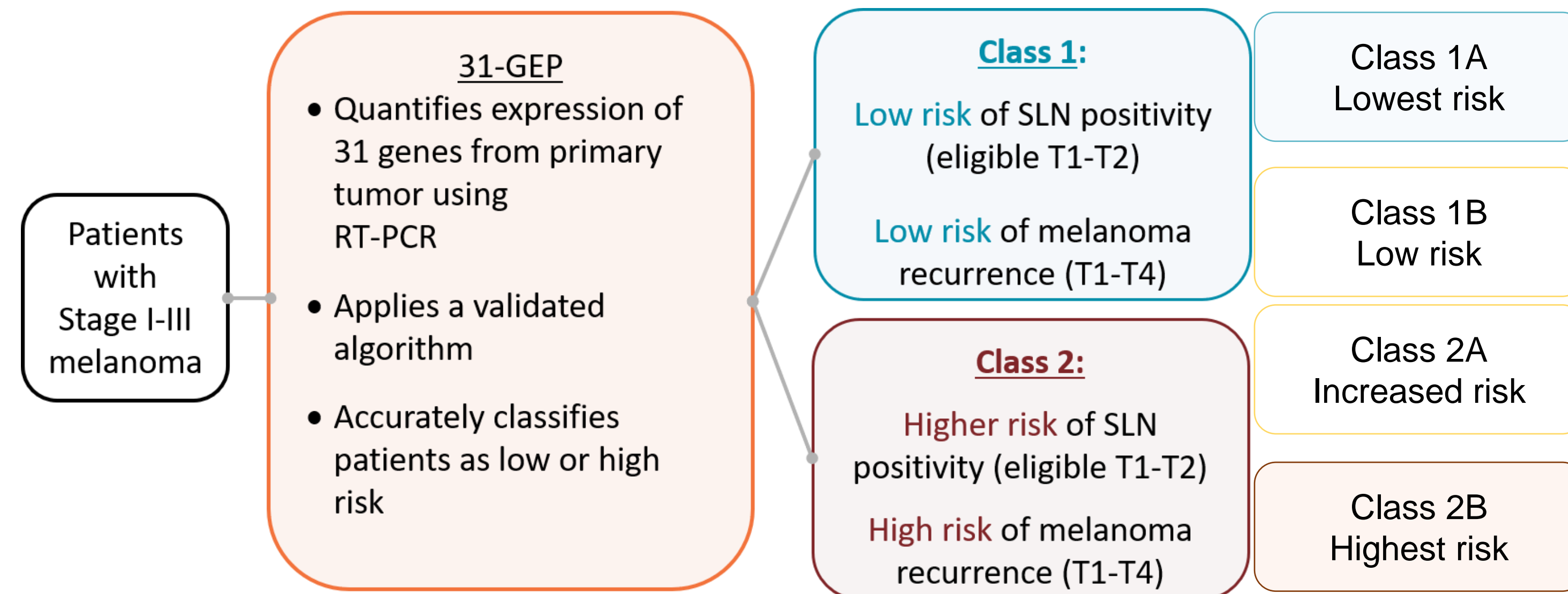
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## BACKGROUND

- Cutaneous melanoma staging is based on primary tumor characteristics, sentinel lymph node (SLN) status, and metastasis.<sup>1,2</sup>
- The 31-gene expression profile (31-GEP) prognostic test for cutaneous melanoma uses the expression of 28 discriminant genes and 3 control genes from the primary tumor to classify a patient's recurrence risk as low (Class 1: Class 1A lowest) or high (Class 2: Class 2B highest) (Figure 1) and has been validated in multiple prospective and retrospective studies,<sup>3-15</sup> and may improve risk stratification in both SLN negative and positive populations.
- We hypothesized that the 31-GEP could add prognostic value and clinical impact in a single high-volume melanoma surgery center.

Figure 1. 31-GEP stratifies patients by recurrence risk.

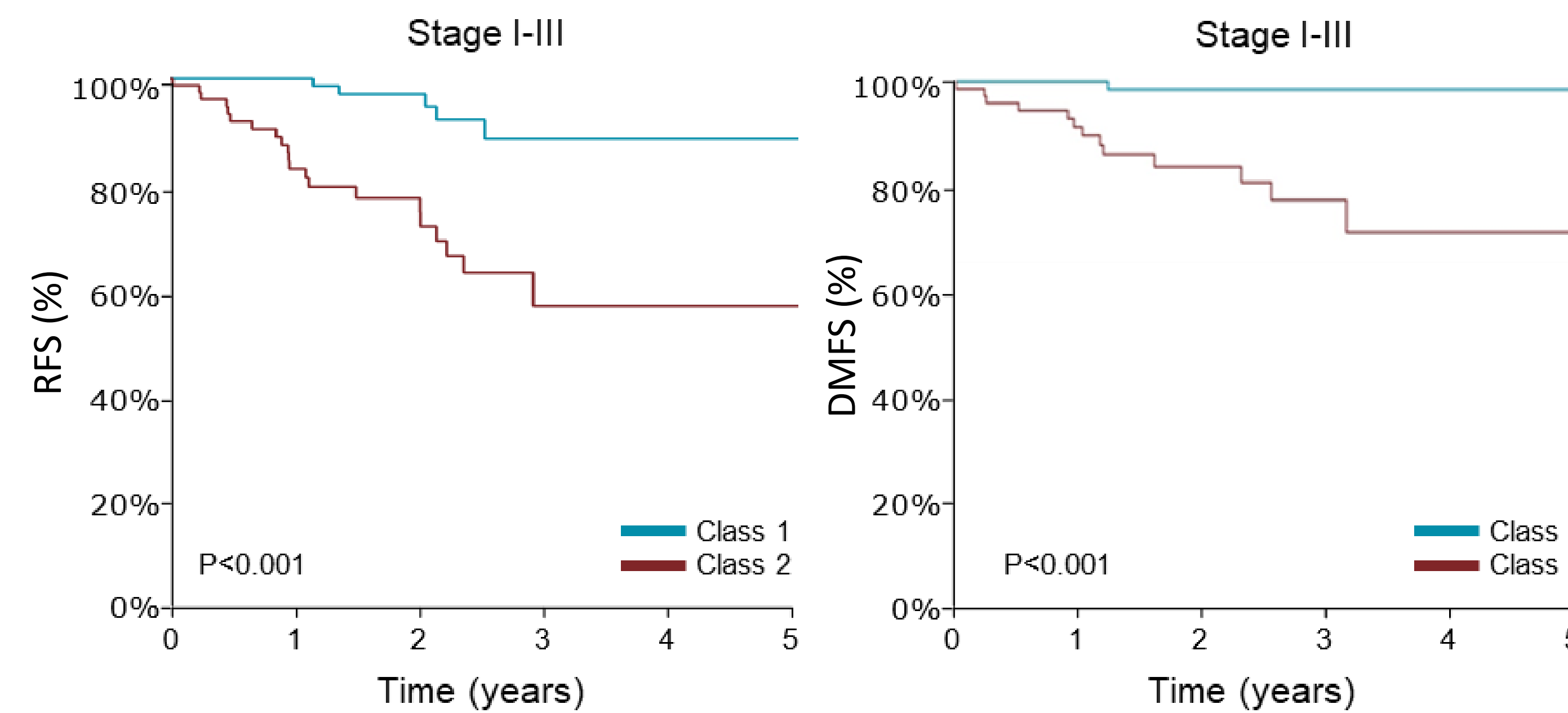


## METHODS

- Two hundred and two patients with stage I-III melanoma from a single surgical oncology practice were enrolled in an IRB-approved retrospective study.
- Outcomes were assessed to determine 3-year recurrence-free (RFS) and distant metastasis-free survival (DMFS) using Kaplan-Meier and Cox regression analysis.

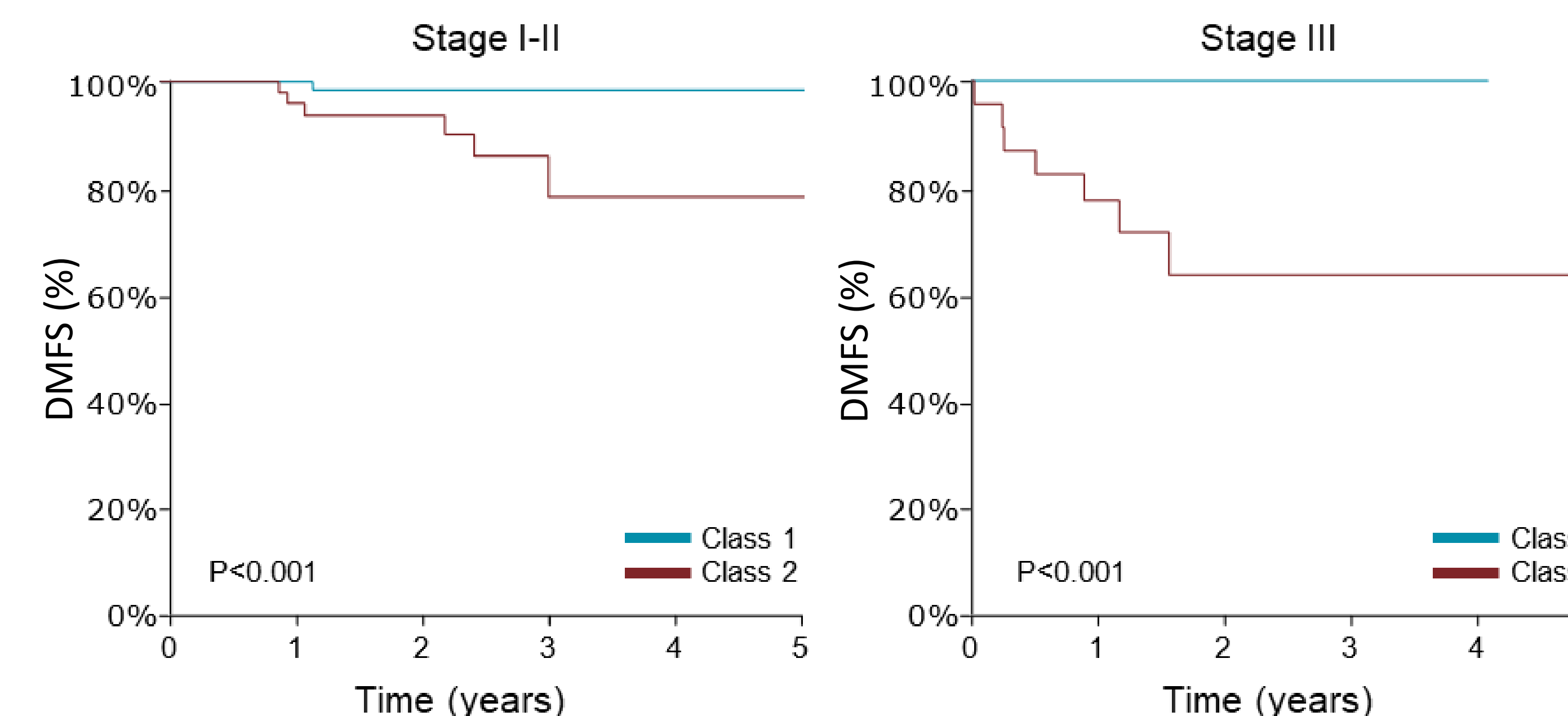
## Results

Figure 2. Three-year RFS in patients with stage I-III cutaneous melanoma. Patients with a 31-GEP Class 1 result have significantly higher RFS and DMFS than patients with a Class 2 result.



Population	3-yr RFS (95% CI)	Events (%)
Class 1 (n=121)	89% (80-99%)	5 (4%)
Class 2 (n=81)	65% (45-78%)	22 (27%)

Population	3-yr DMFS (95% CI)	Events (%)
Class 1 (n=121)	99% (96-100%)	1 (1%)
Class 2 (n=81)	79% (60-90%)	14 (17%)



Population	3-yr DMFS (95% CI)	Events (%)
Class 1/ SLN- (n=105)	98% (95-100%)	1 (1%)
Class 2/ SLN- (n=58)	86% (75-99%)	7 (12%)

Population	3-yr DMFS (95% CI)	Events (%)
Class 1/ SLN+ (n=16)	100% (100-100%)	0 (0%)
Class 2/ SLN+ (n=23)	64% (45-91%)	7 (30%)

Table 1. Multivariable Cox regression analysis for 5-year outcomes

RFS (3-yr)	Univariate		Multivariable	
Feature	HR (95% CI)	P-value	HR (95% CI)	P-value
AJCC 8 <sup>th</sup> ed. High-risk*	3.6 (1.6-8.1)	.002	1.9 (0.8-4.6)	.145
GEP Class 2	6.2 (2.3-16.3)	<.001	4.59 (1.6-13.2)	.005

DMFS (3-yr)	Univariate		Multivariable	
Feature	HR (95% CI)	P-value	HR (95% CI)	P-value
AJCC 8 <sup>th</sup> ed. High-risk*	7.0 (2.0-25.1)	.003	3.1 (0.8-11.7)	.094
GEP Class 2	18.5 (2.4-141.3)	.005	11.3 (1.4-92.9)	.024

\*High-risk: AJCC stage IIB-III vs. stage I-IIA.

## CONCLUSIONS

- The 31-GEP accurately and significantly stratified 3-year RFS and DMFS for patients managed at a single surgery oncology center.
- A Class 2 result was a significant predictor of 3-year RFS and DMFS in univariate and multivariable analysis.
- The 31-GEP was a stronger predictor of RFS and DMFS than AJCC 8<sup>th</sup> ed.
- Improved risk stratification may lead to improved healthcare resource allocation.

## REFERENCES, FUNDING & DISCLOSURES

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