

## Population Genetics of Glyoxalase I (E.C.4.4.1.5) in Human Erythrocytes

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### Populationsgenetik der Glyoxalase I (E.C.4.4.1.5) in menschlichen Erythrocyten

**Summary.** 1025 individuals from Southern Germany were examined. The gene frequencies for GLI<sup>1</sup> are 0.4235 and for GLI<sup>2</sup> 0.5765. These frequencies are compared with those of other authors.

**Zusammenfassung.** 1025 Personen aus dem süddeutschen Raum wurden untersucht; die Genfrequenzen für GLI<sup>1</sup> lauten 0,4235 und für GLI<sup>2</sup> 0,5765. Dieses Ergebnis wird mit dem anderer Autoren verglichen.

**Key word.** GLI, gene frequencies

Glyoxalase I (GLI) catalyzes the irreversible conversion of glutathione and methylglyoxal to S-lactoyl-glutathione.

First Kömpf and Bissbort reported about the genetically determined enzyme polymorphism of GLI in man. The three common phenotypes GLI 1, GLI 2-1 and GLI 2 are determined by the two alleles GLI<sup>1</sup> and GLI<sup>2</sup>. Bender could show that the gene locus is localized on chromosome 6 near the HL-A region.

### Material and Methods

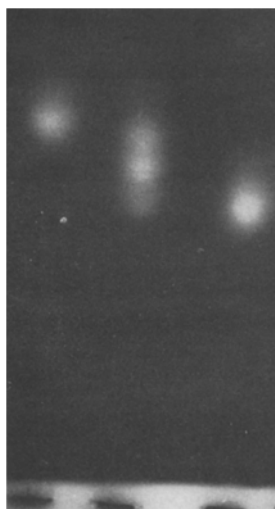
We examined 1025 blood samples from Southern Germany. For separation we used the method according to Kömpf et al.

### Results and Discussion

Fig. 1. shows the isozyme patterns observed

Start —  
GLI      2    2-1    1

The following table demonstrates the phenotype distribution:



**Fig. 1.** The common isozyme patterns of GLI 2, GLI 2-1 and GLI 1 in the buffer system of Kömpf et al.

**Table 1.** Observed and expected values of a random sample from Southern Germany

| GLI phenotype | observed value |      | expected value |      | Chi square |
|---------------|----------------|------|----------------|------|------------|
|               | n              | %    | n              | %    |            |
| 1             | 170            | 16.6 | 183.8          | 17.9 | 1.0476     |
| 2 - 1         | 528            | 51.5 | 500.5          | 48.9 | 1.5098     |
| 2             | 327            | 31.9 | 340.7          | 33.2 | 0.5516     |
| total         | 1025           | 100  | 1025           | 100  | 3.1090     |

gene frequency GLI<sup>1</sup> : 0.4235 gene frequency GLI<sup>2</sup> : 0.5765

The values are in good agreement, the Hardy-Weinberg equilibrium ( $df=1$ ;  $0.05 < p(0.10$ ,  $X^2=3.1090$ ) is given.

**Table 2.** Comparison of our results with those of other authors

| Authors                   | GLI <sup>1</sup> | GLI <sup>2</sup> | n    |
|---------------------------|------------------|------------------|------|
| Kömpf and Bissbort (1975) | 0.427            | 0.573            | 655  |
| Martin (1975)             | 0.365            | 0.635            | —    |
| Present paper (1976)      | 0.423            | 0.577            | 1025 |

## References

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