# PYROSEQUENCING
# Polymerase has the Power

# PYROSEQUENCING: THE ORIGINS

ELSEVIER

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## Enzymatic method for continuous monitoring of DNA polymerase activity ☆

Pål Nyrén

"… One late afternoon in the beginning of January 1986, …… the idea for an alternative DNA sequencing technique came to my mind. The basic concept was to **follow the activity of DNA polymerase during nucleotide incorporation into a DNA strand by analyzing the pyrophosphate released during the process.**

# SNPs vs POINT MUTATIONs

Analytical Biochemistry **280**, 103–110 (2000)
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## Single-Nucleotide Polymorphism Analysis by Pyrosequencing

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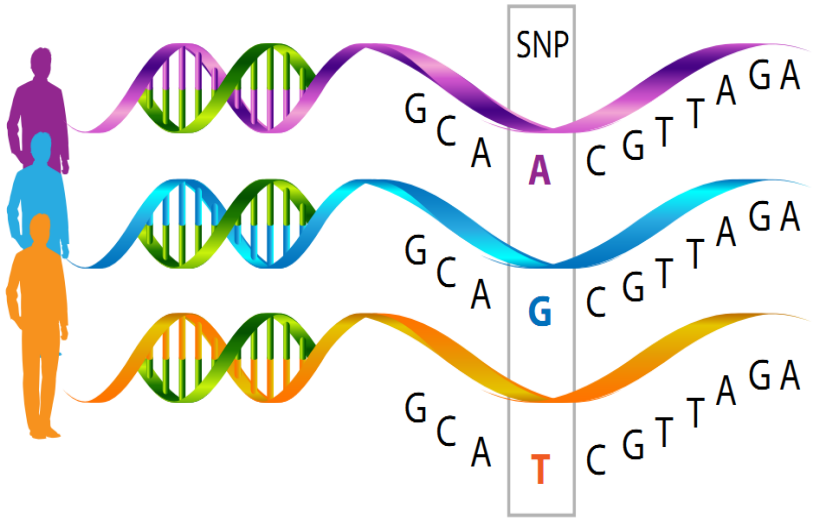


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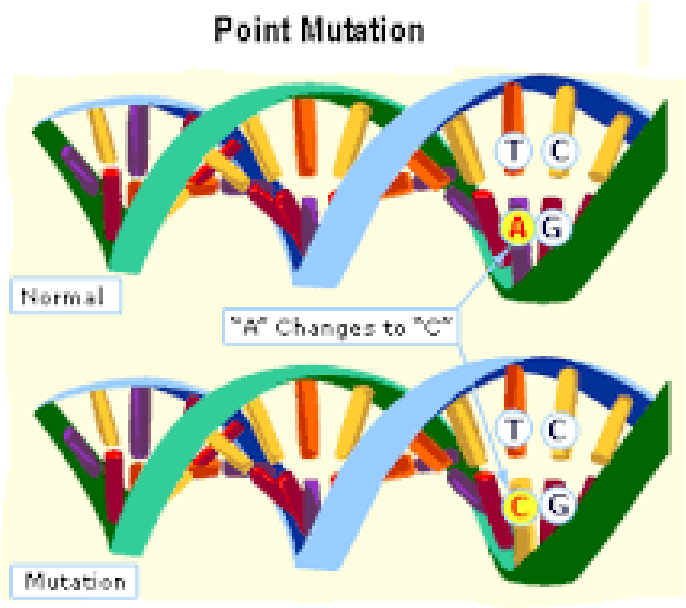
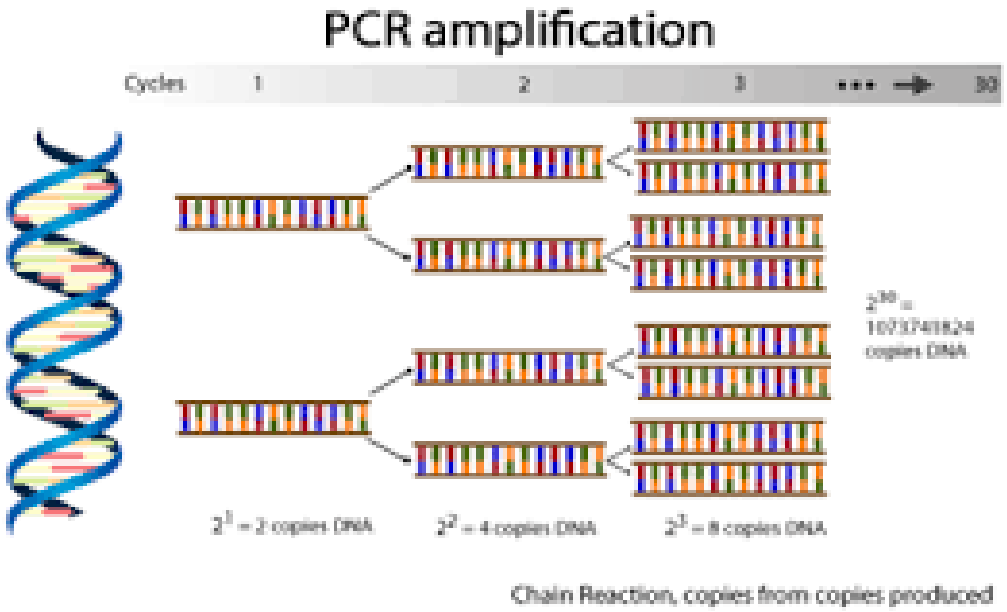
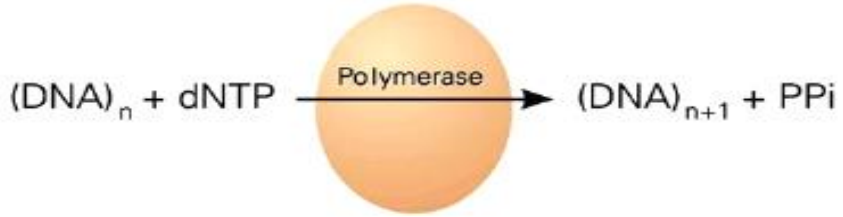


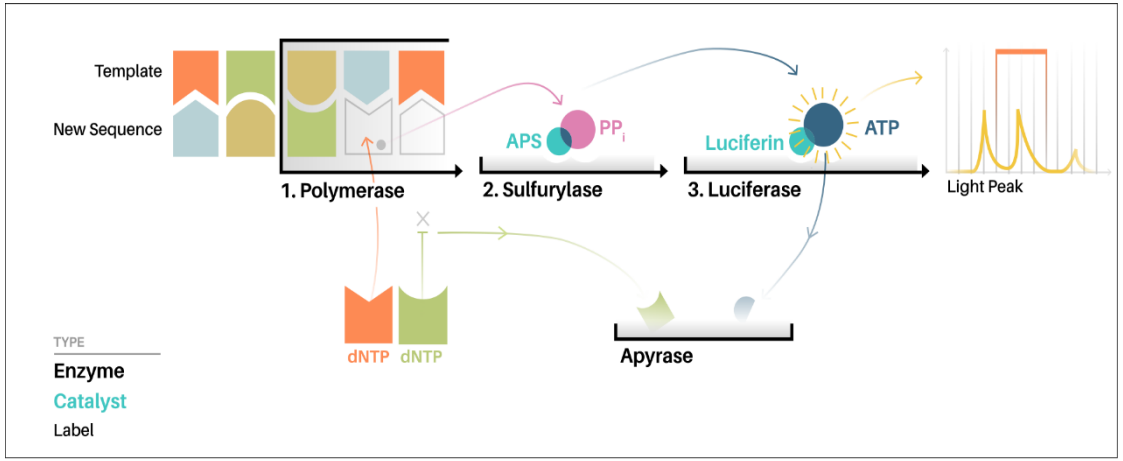
# PYROSEQUENCING: THE FEATURES (PART 1)

## 1. PCR-BASED METHOD




## 2. ENZYMATIC, SEQUENCE BY SINTESYS TECHNIQUE



# PYROSEQUENCING: THE FEATURES (PART 2)

## 3. SHORT/MEDIUM RANGE SEQUENCE

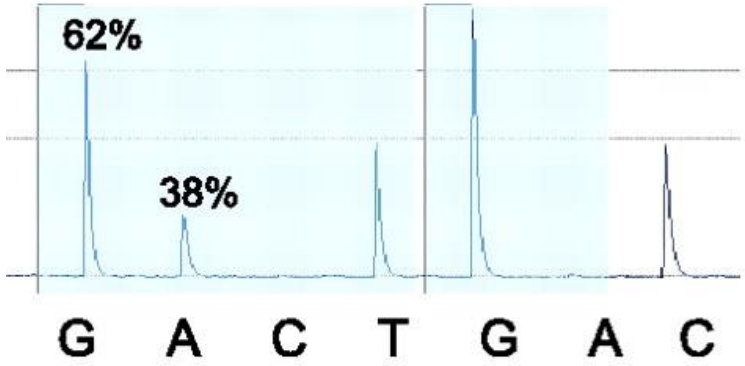
NO MORE THAN 30-50 NUCLEOTIDE

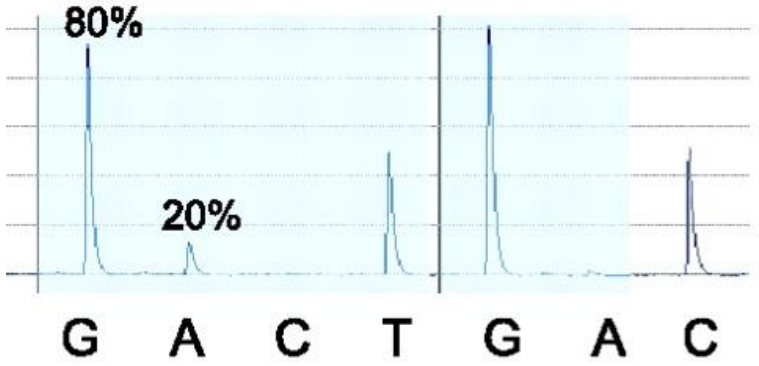
SENSIBILITY

SPECIFICITY

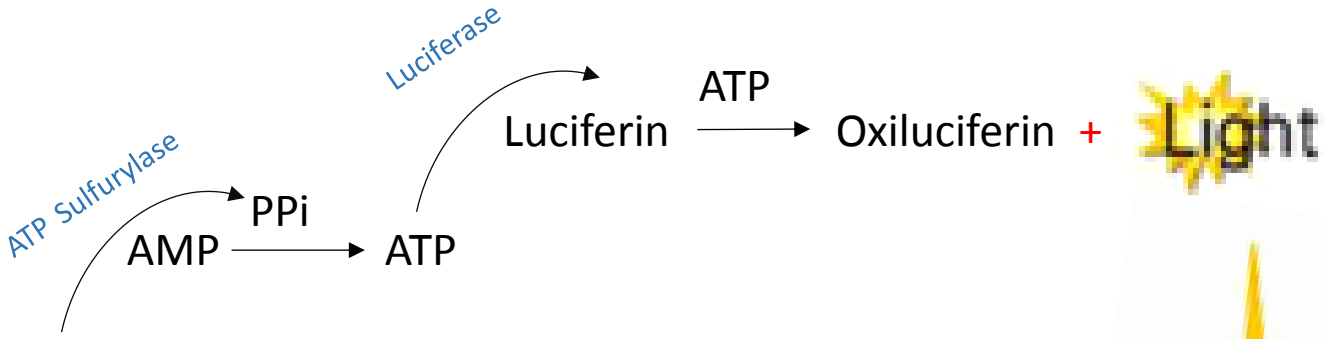
## 4. QUANTITATIVE:

PERCENTAGE OF MUTATION

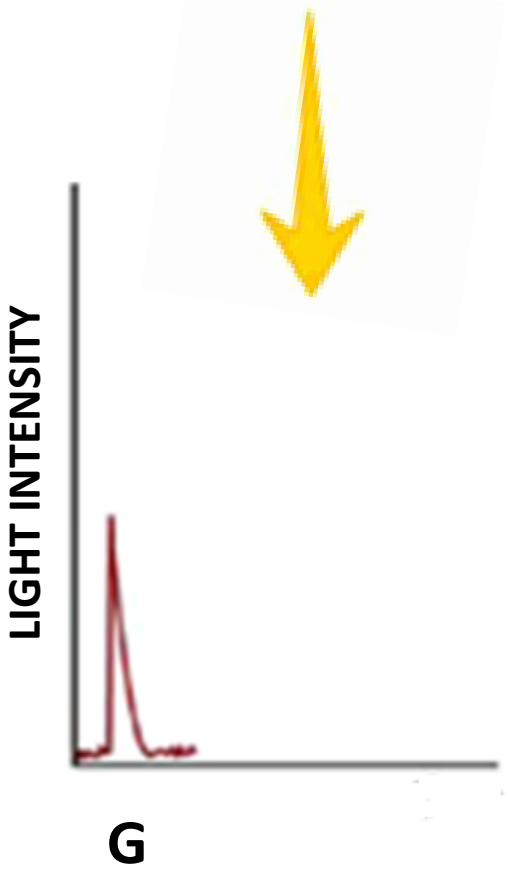


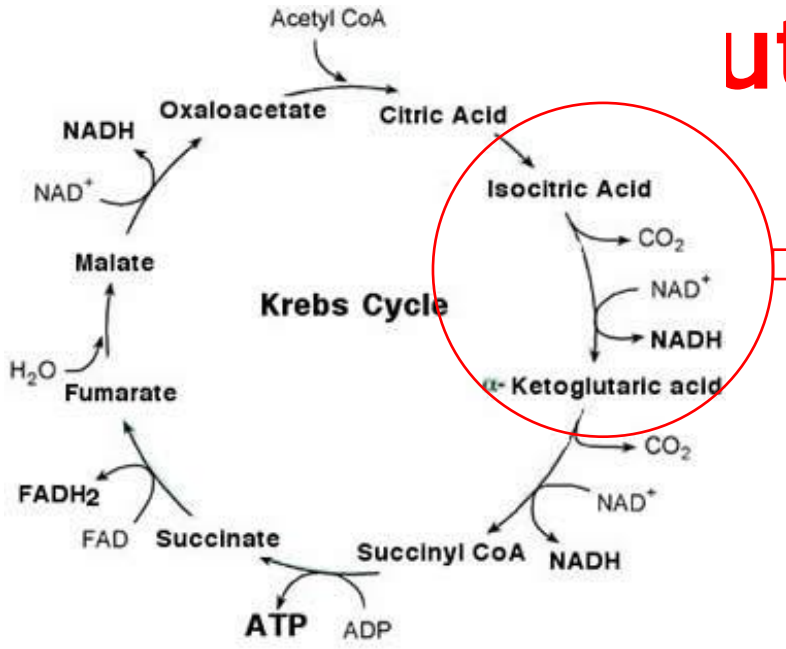
# PYROSEQUENCING: THE CHEMISTRY

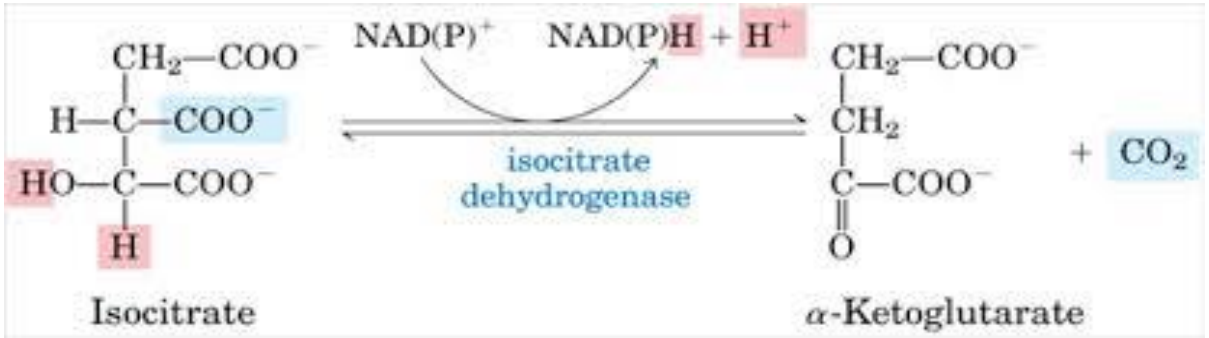



5’-TGGACCTGAGCTG
DNA polymerase
3’-ACCTGGACTCGACGGAGGTGGCTAGATG-5’



# THE PYROSEQUENCING OUTPUT (1): *IDH1* utation in Glioma



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80-90% of *IDH1* mutated Gliomas carrying the **p.R132H (c.395G>A )**

## *IDH1* and *IDH2* Mutations in Gliomas

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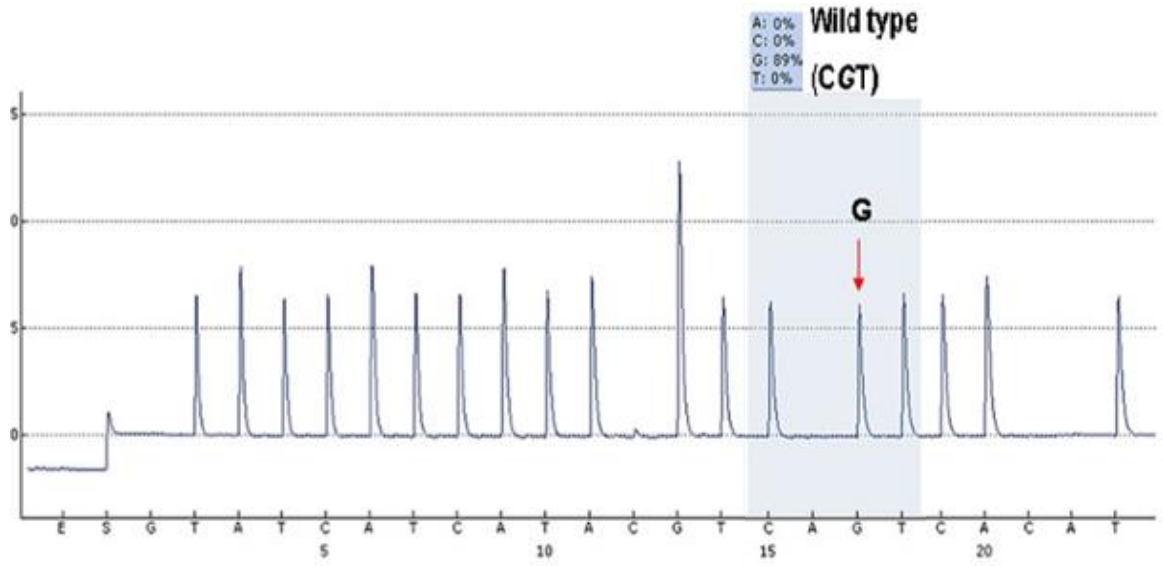
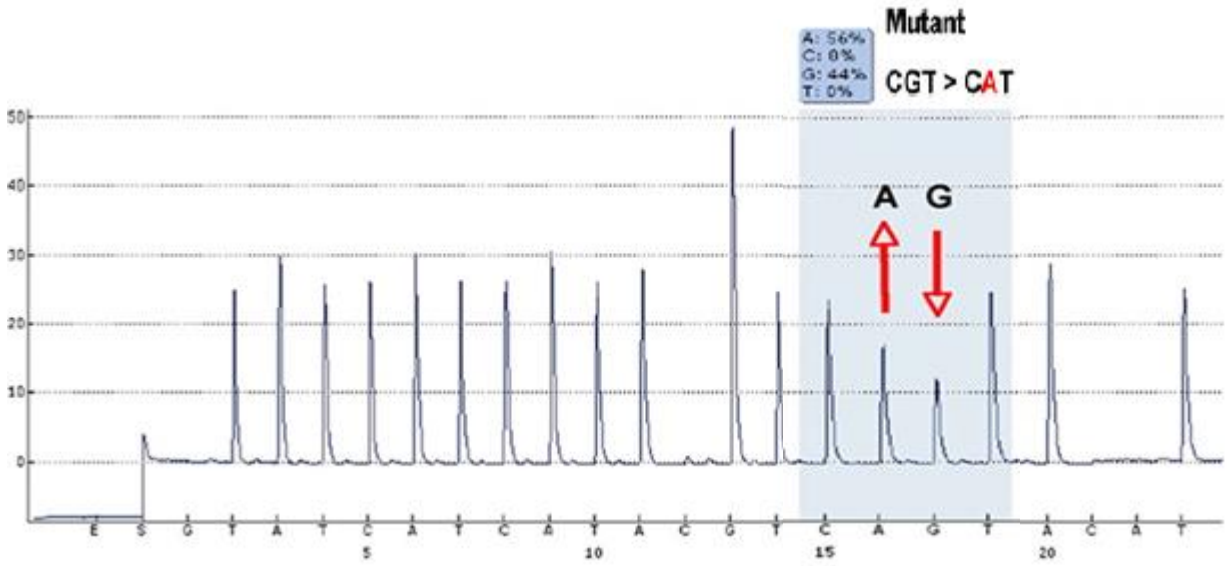
# THE PYROSEQUENCING OUTPUT (2): *IDH1* c.395G>A (p.R132H)




# THANKS FOR YOUR ATTENTION