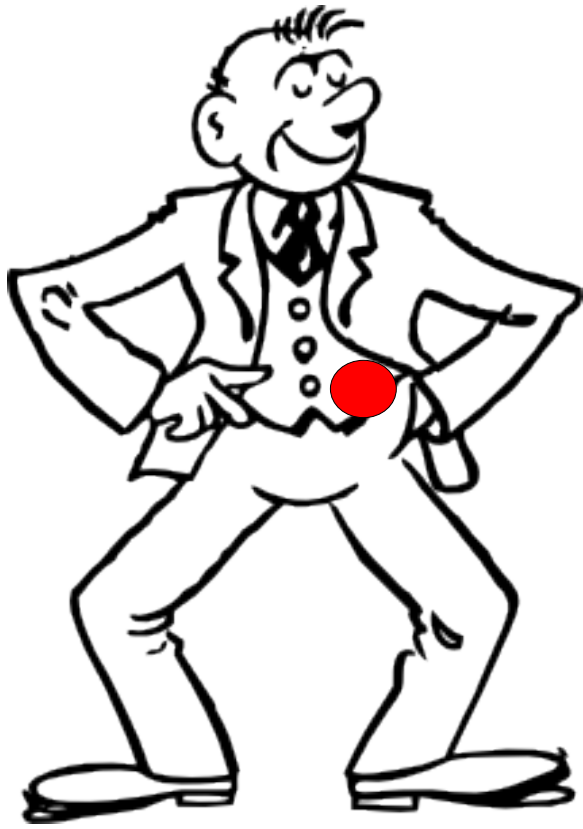


Mr. X









Krebs

Zwei Krebstypen

1

Typ 1: Mild

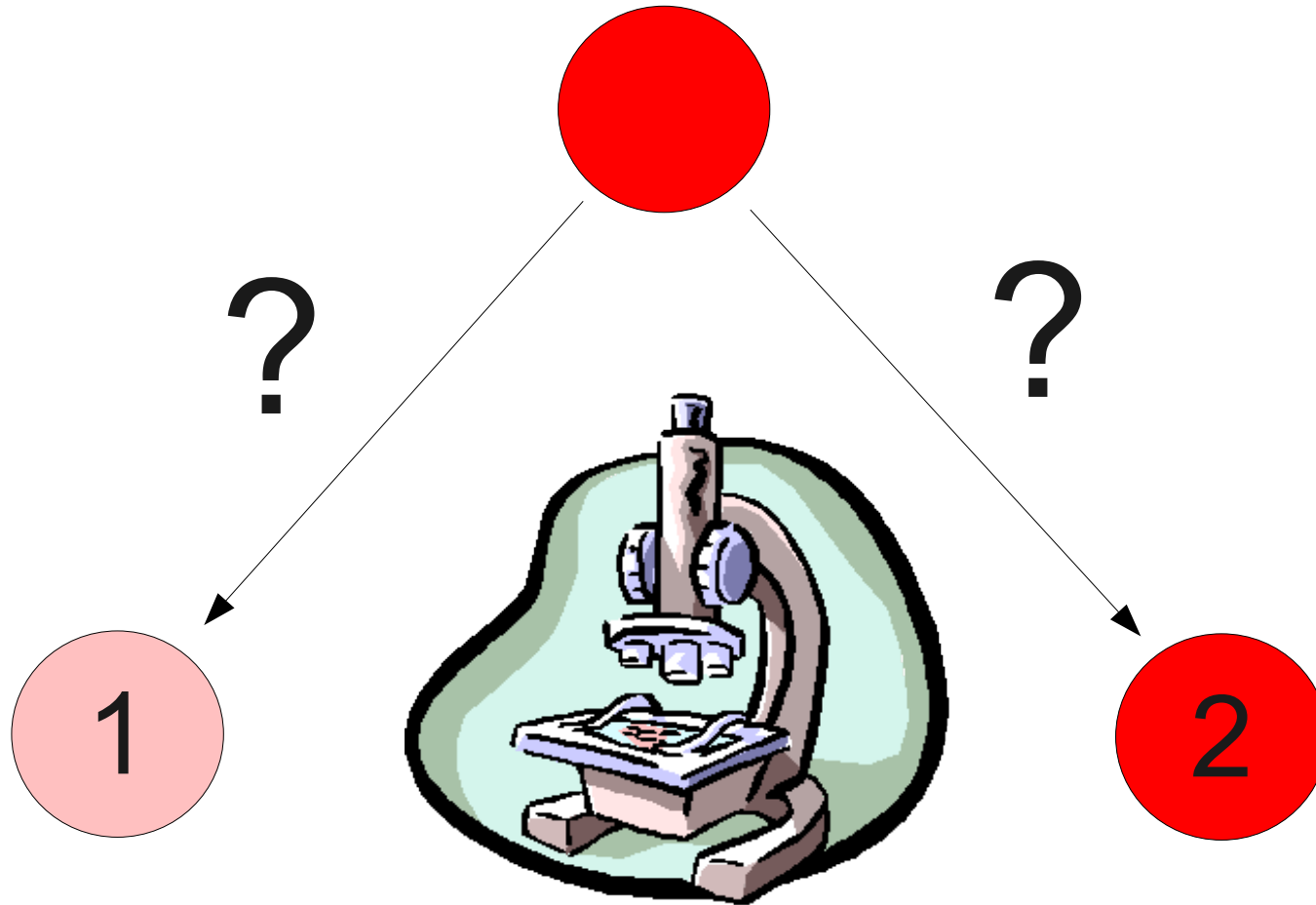
Chemotherapie nicht nötig

2

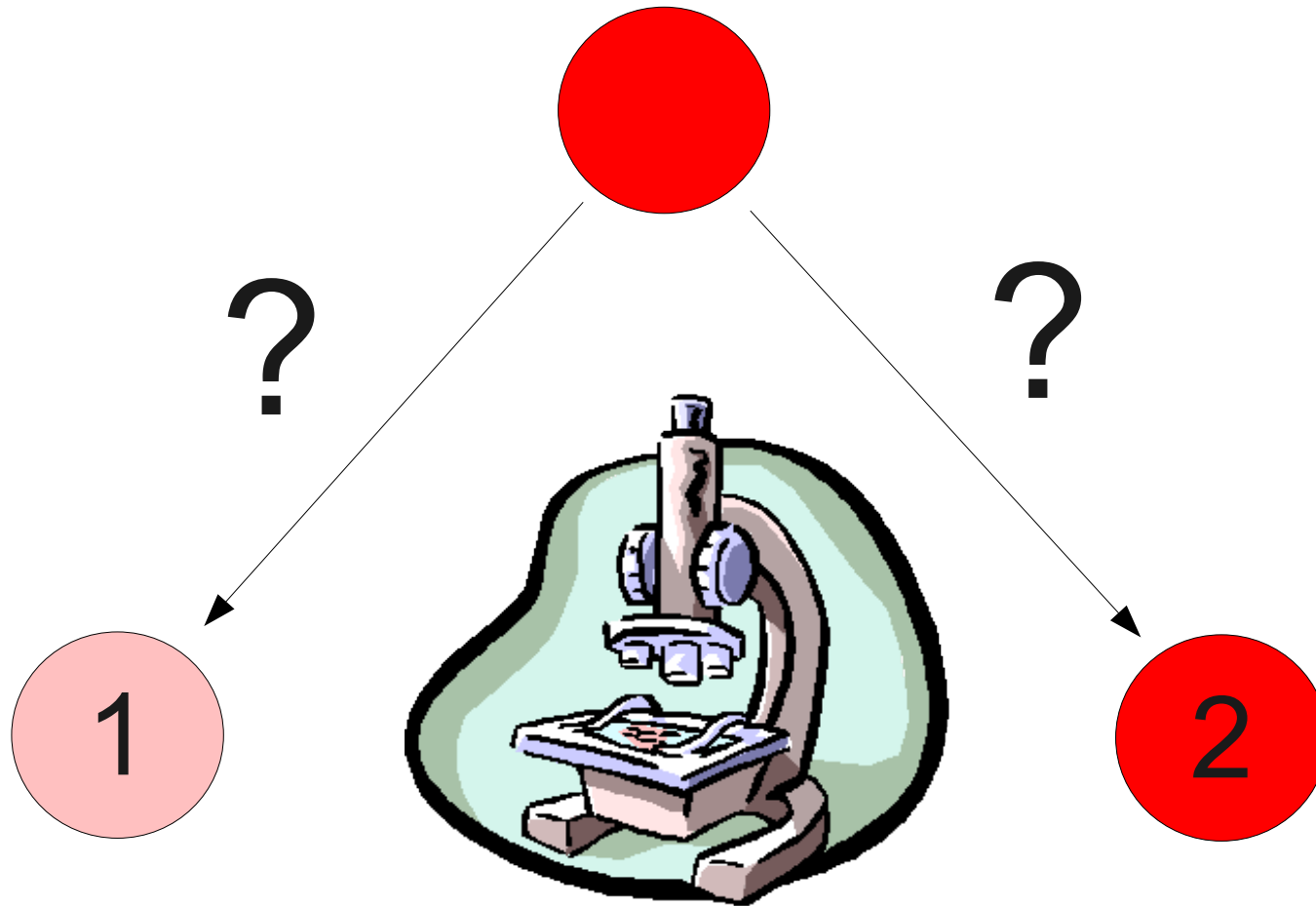
Typ 2: **Schwer**

Chemotherapie **nötig**

Problem:
Typ erst nach langer Zeit erkennbar



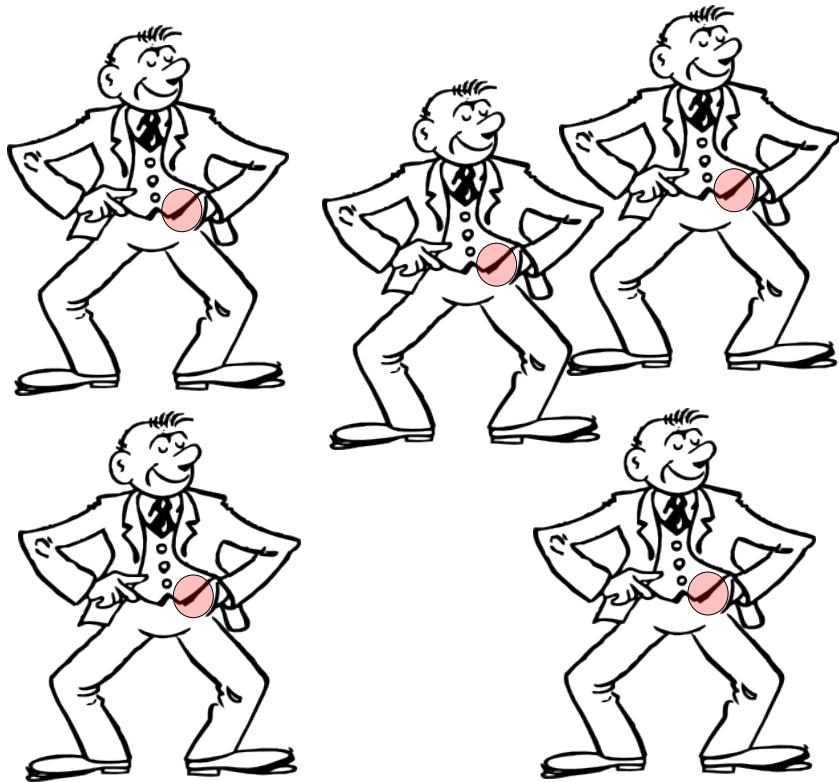
Problem:
Typ erst nach langer Zeit erkennbar



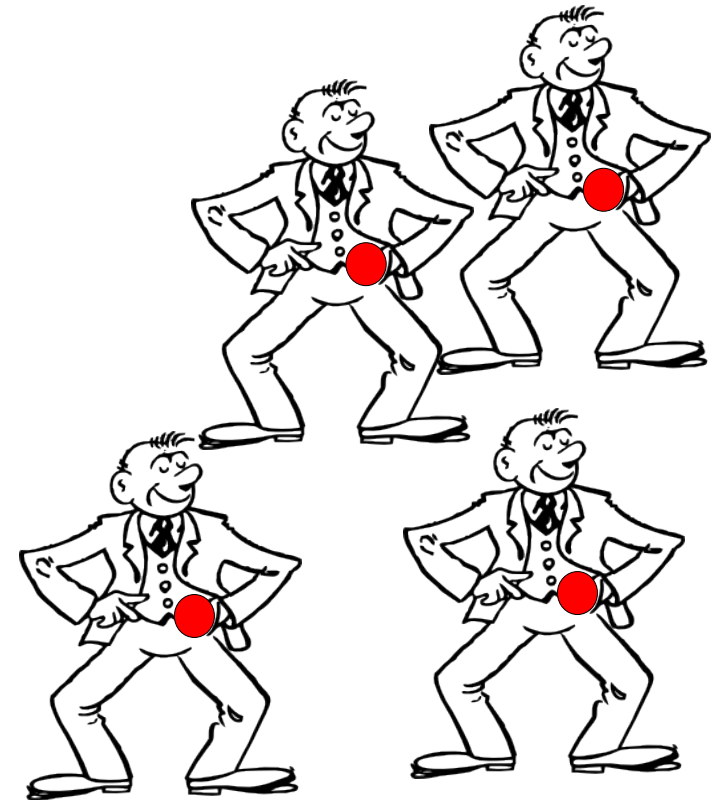
Jetzt **Chemotherapie** oder nicht?

Wie kann man
verschiedene Arten von Krebs
unterscheiden?

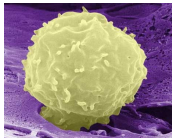
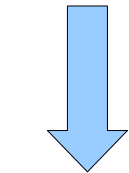
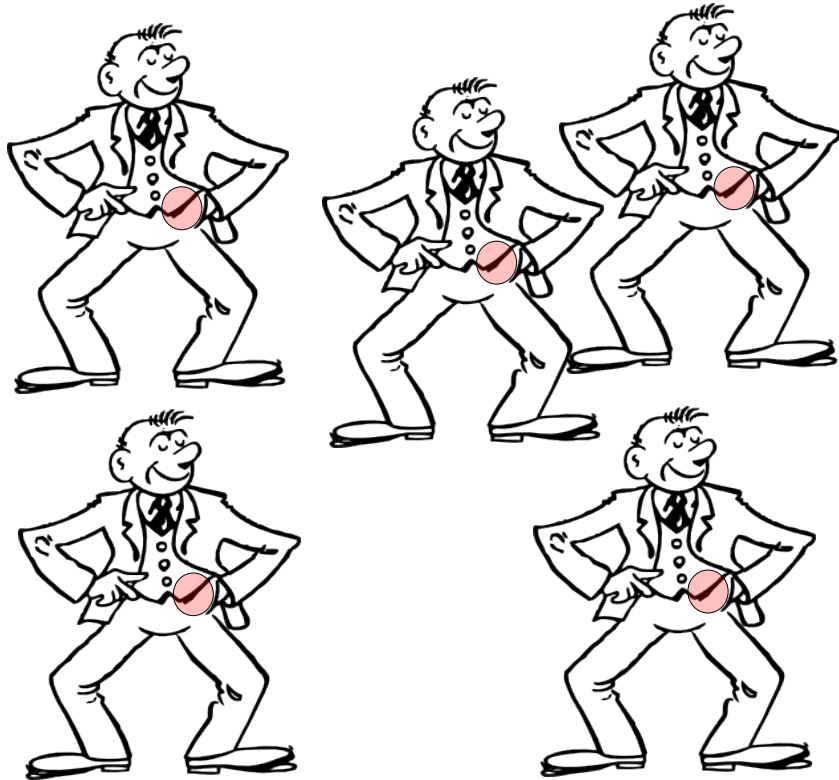
Typ 1



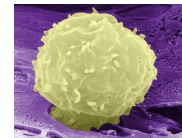
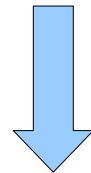
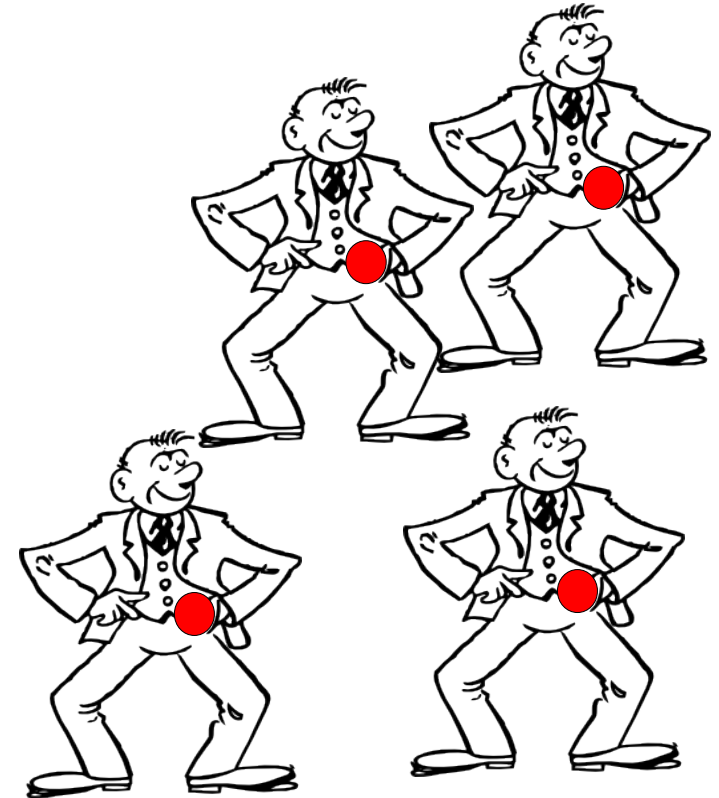
Typ 2



Typ 1



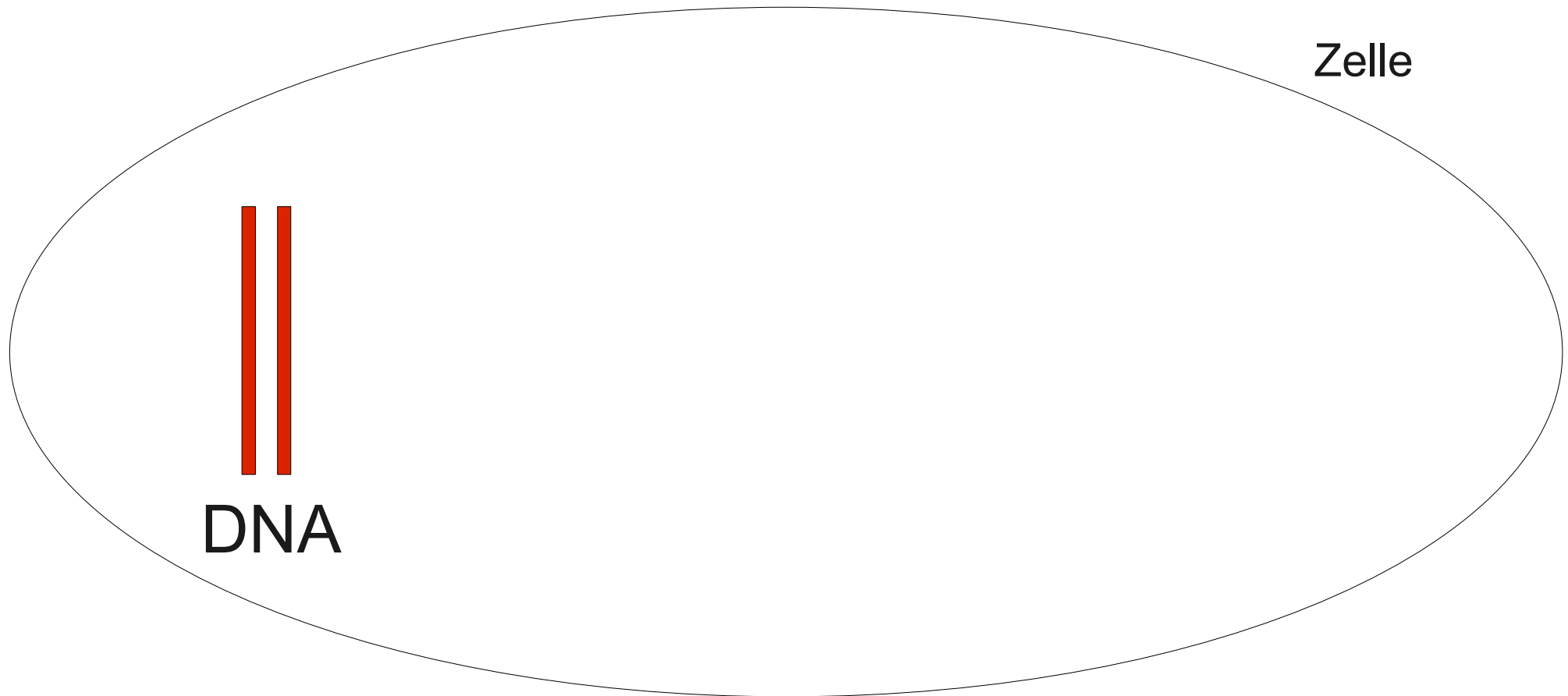
Typ 2



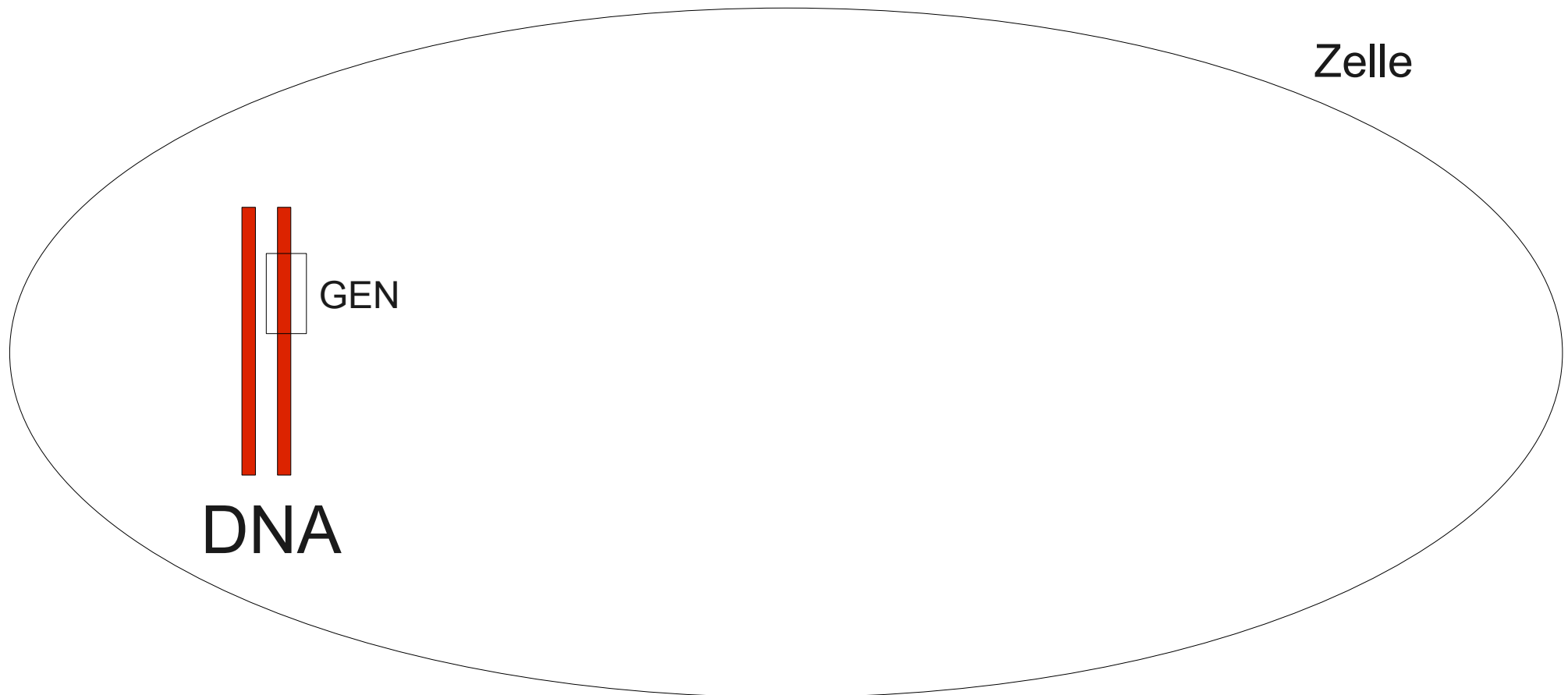
Vergleiche Krebszellen

Idee:
Vergleiche Aktivität
innerhalb der Zelle

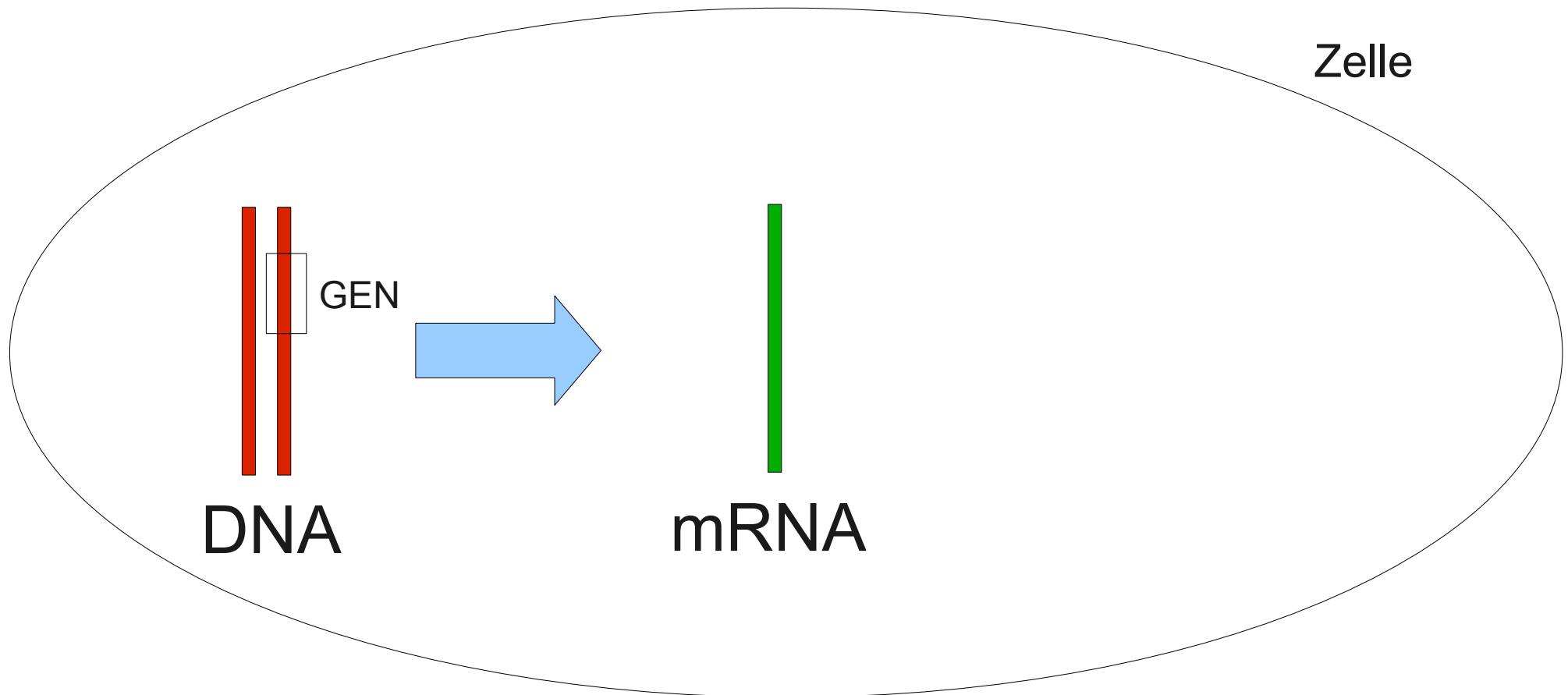
Zentrales Dogma der Molekularbiologie



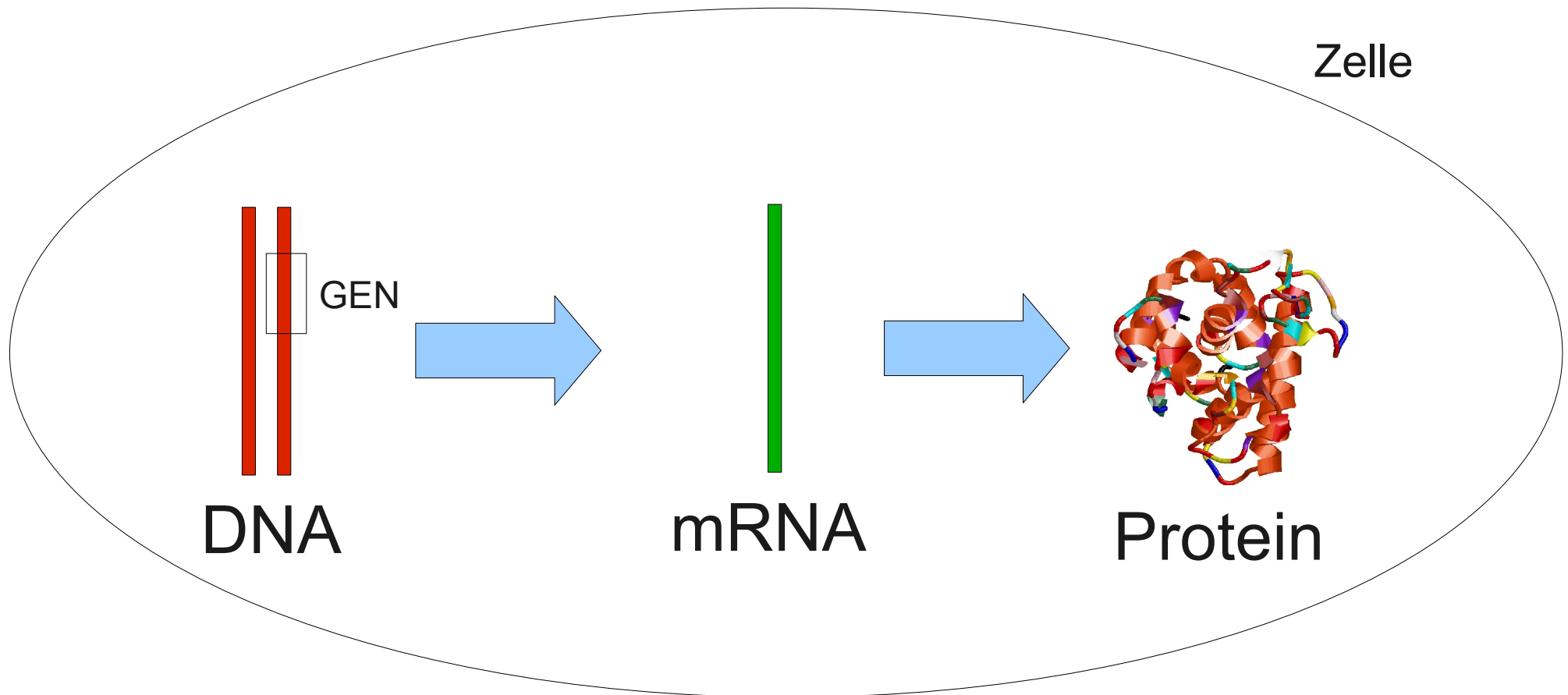
Zentrales Dogma der Molekularbiologie



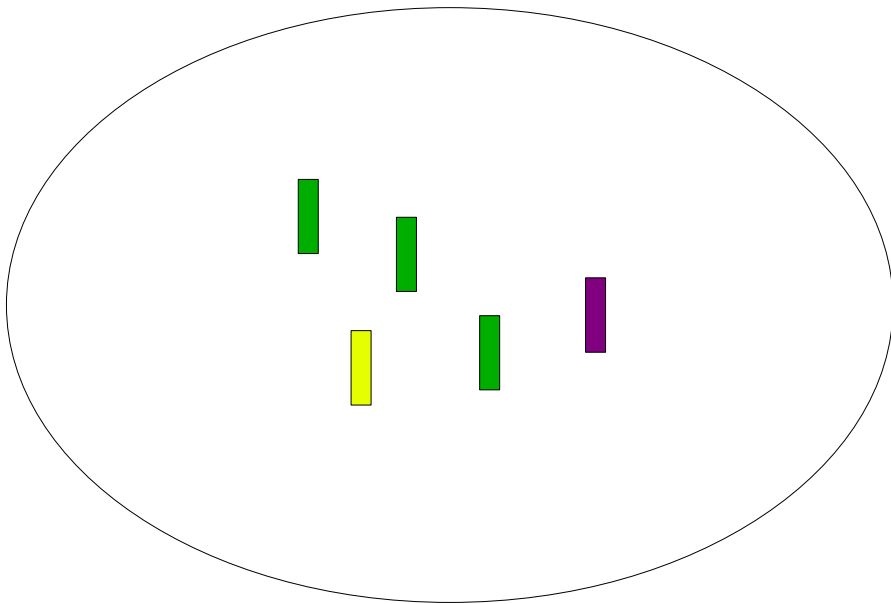
Zentrales Dogma der Molekularbiologie



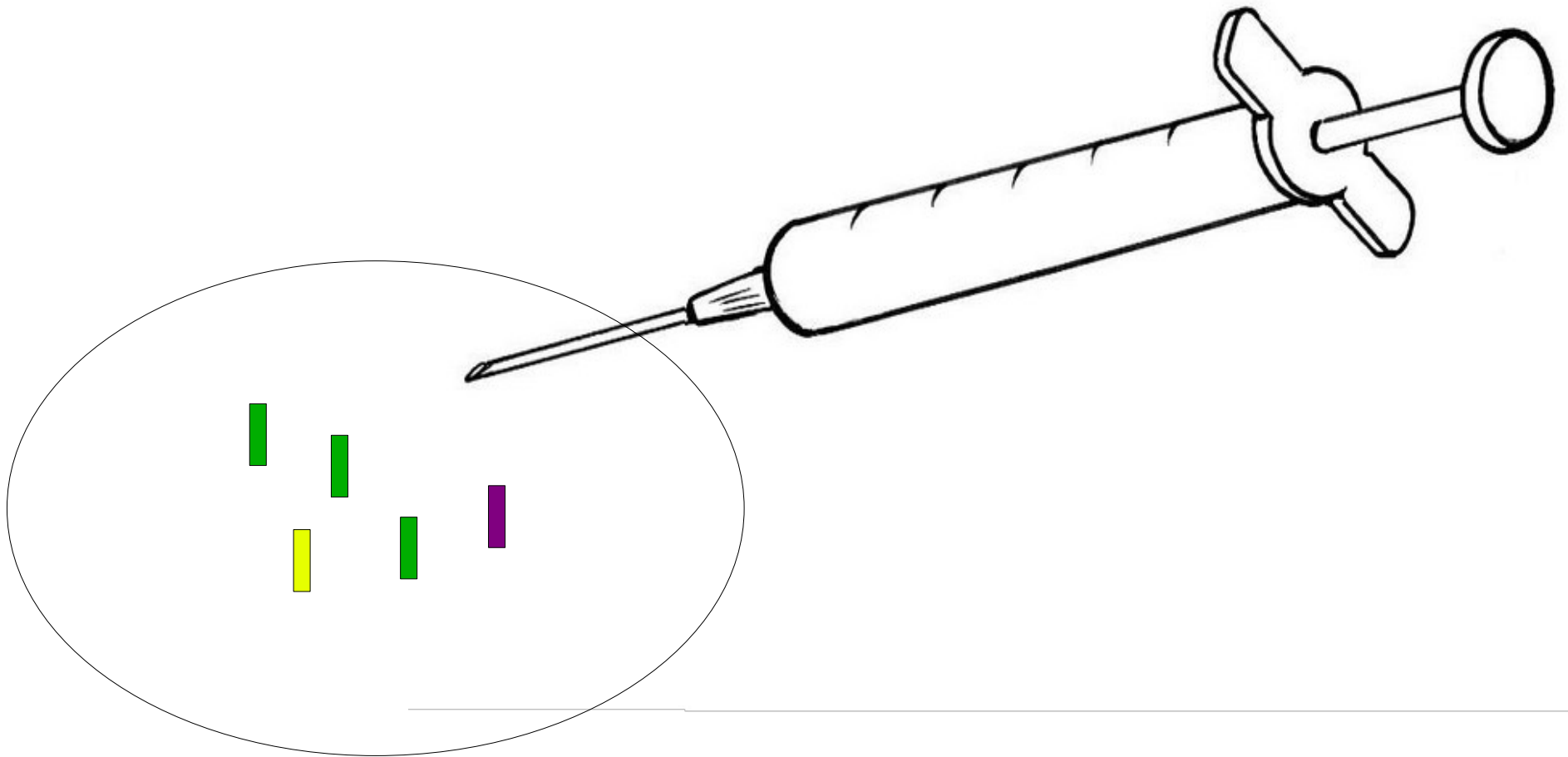
Zentrales Dogma der Molekularbiologie



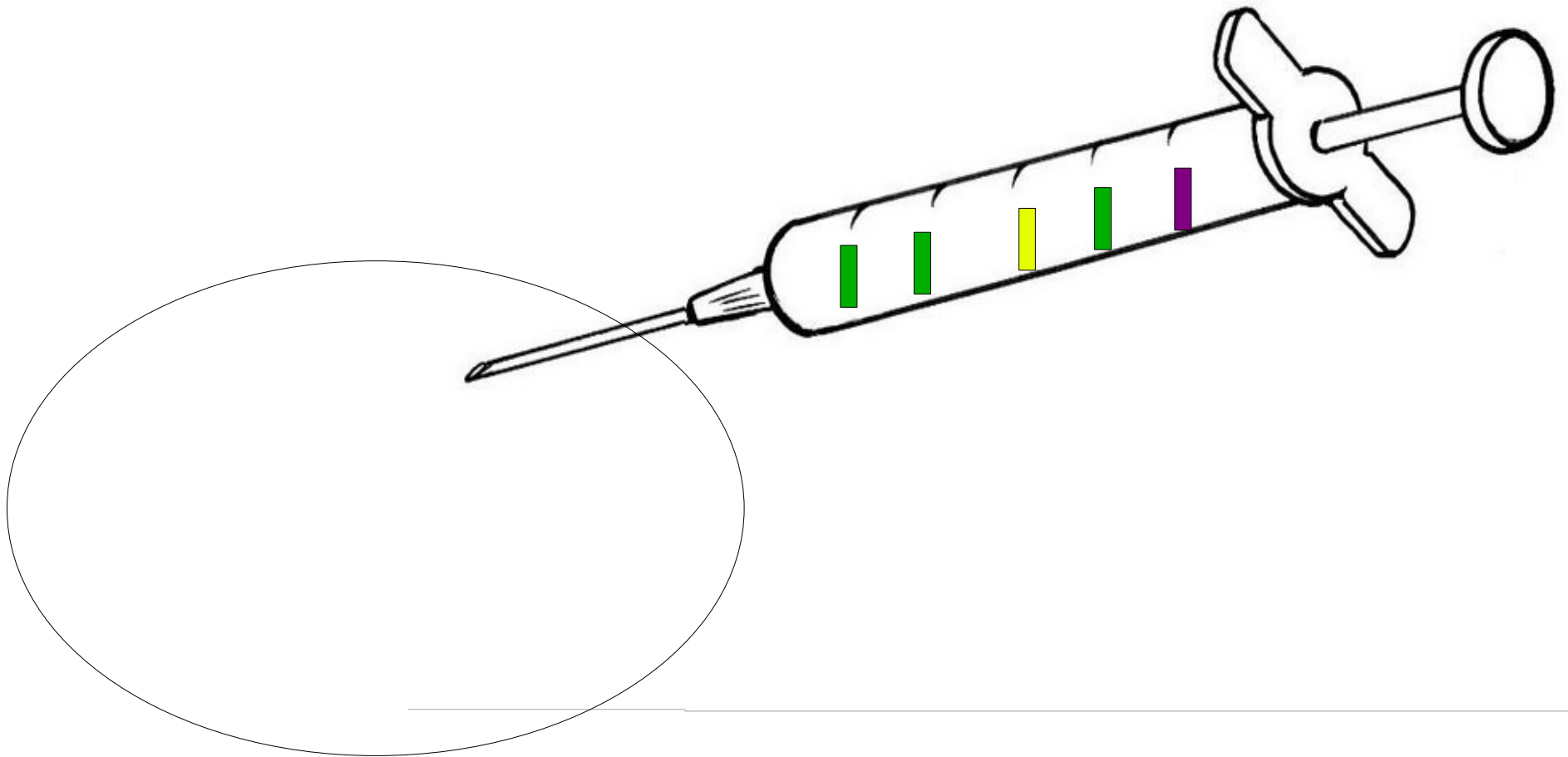
Momentaufnahme: mRNA



Entnahme mRNA



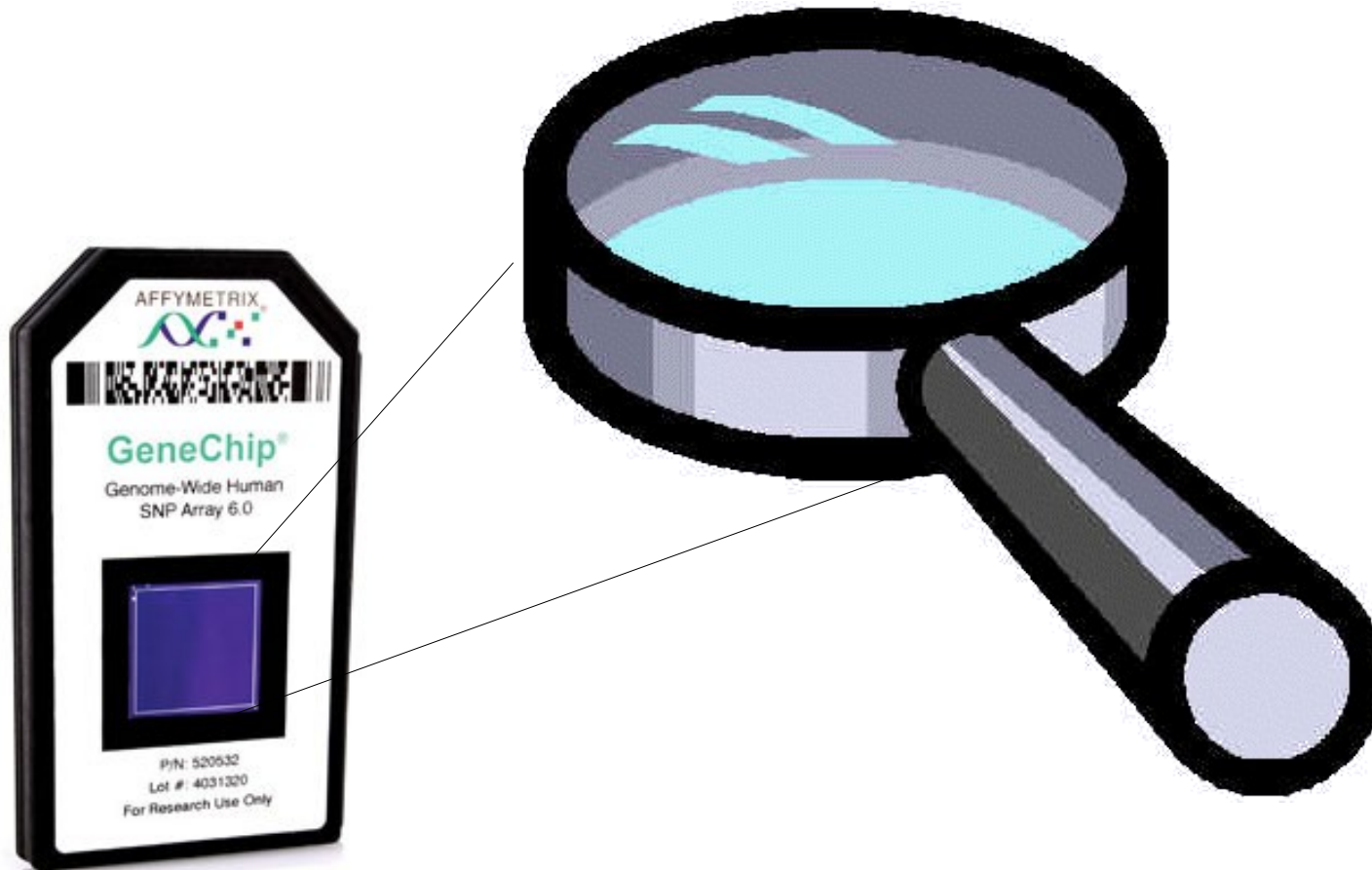
Entnahme mRNA



Nehme einen Microarray

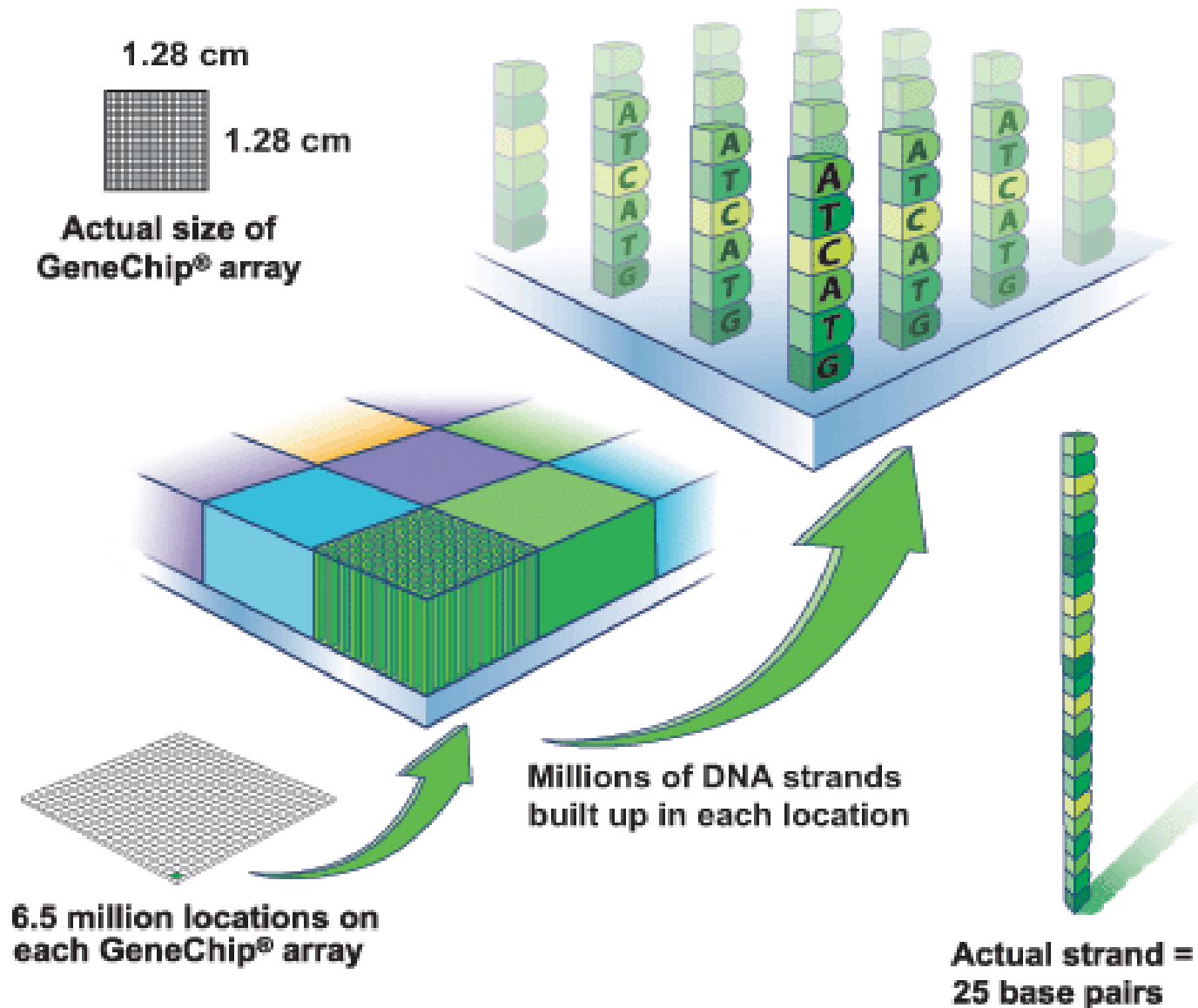


Nehme einen Microarray

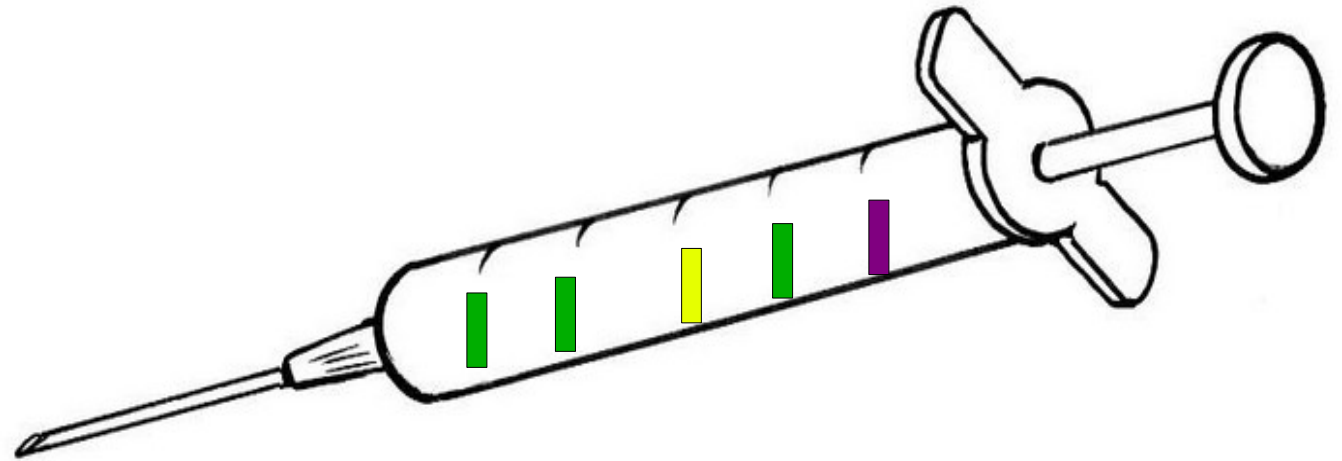


Microarray: Zoom In

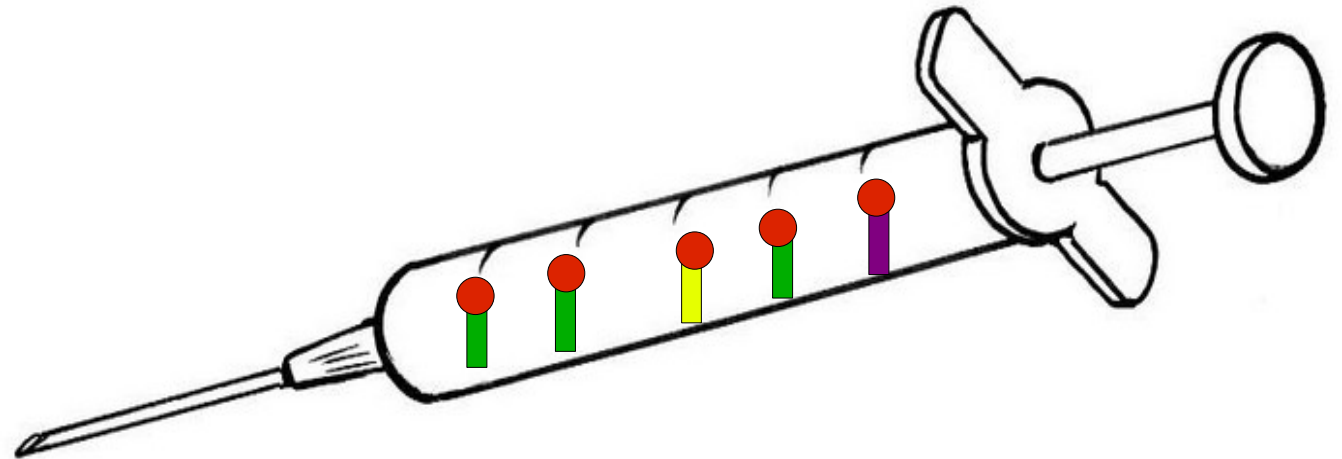
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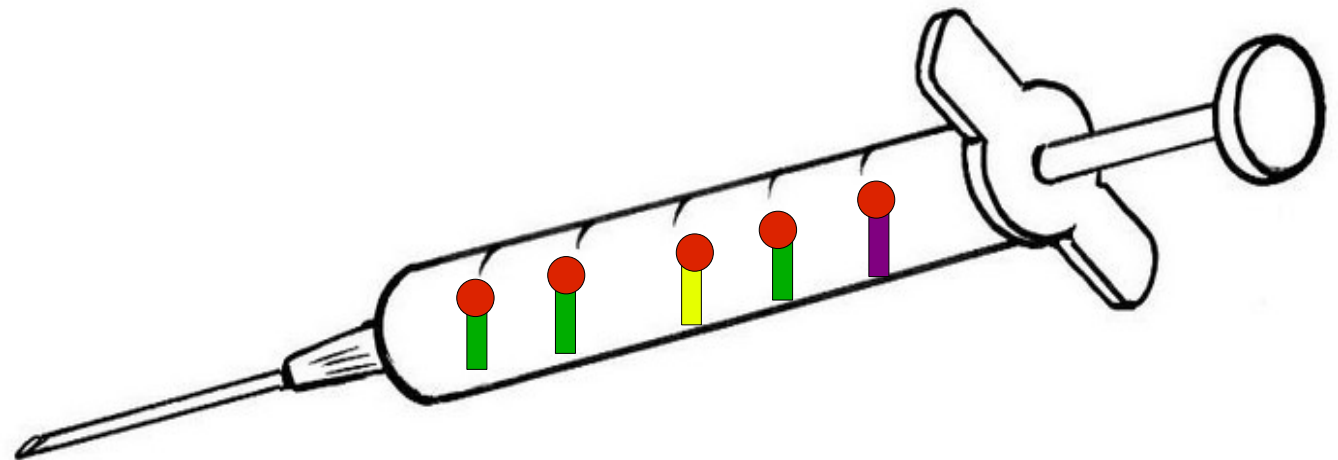
Entnahme mRNA



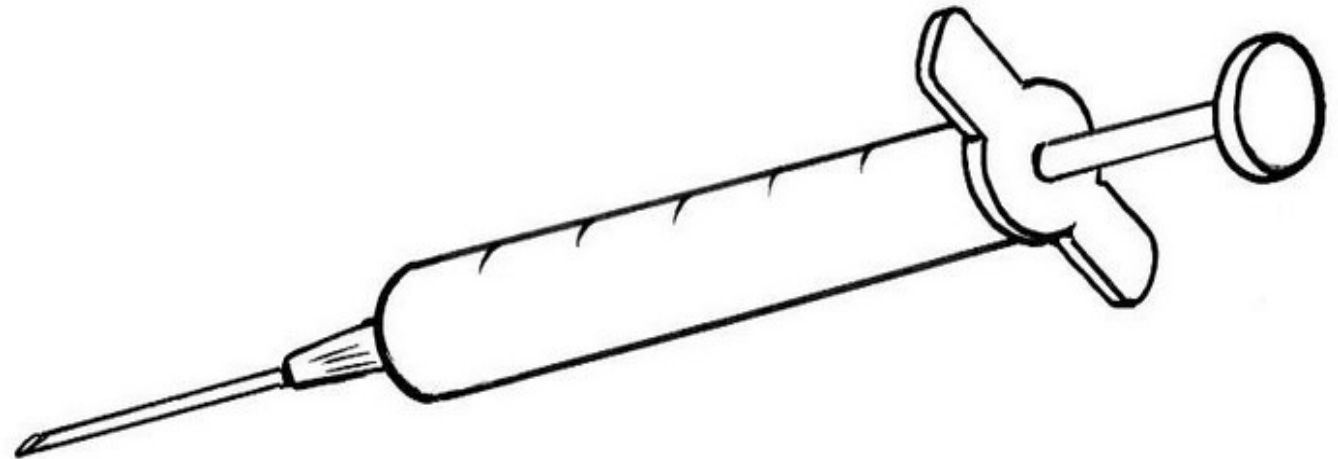
Markiere mRNA mit Farbstoff



mRNA auf Microarray



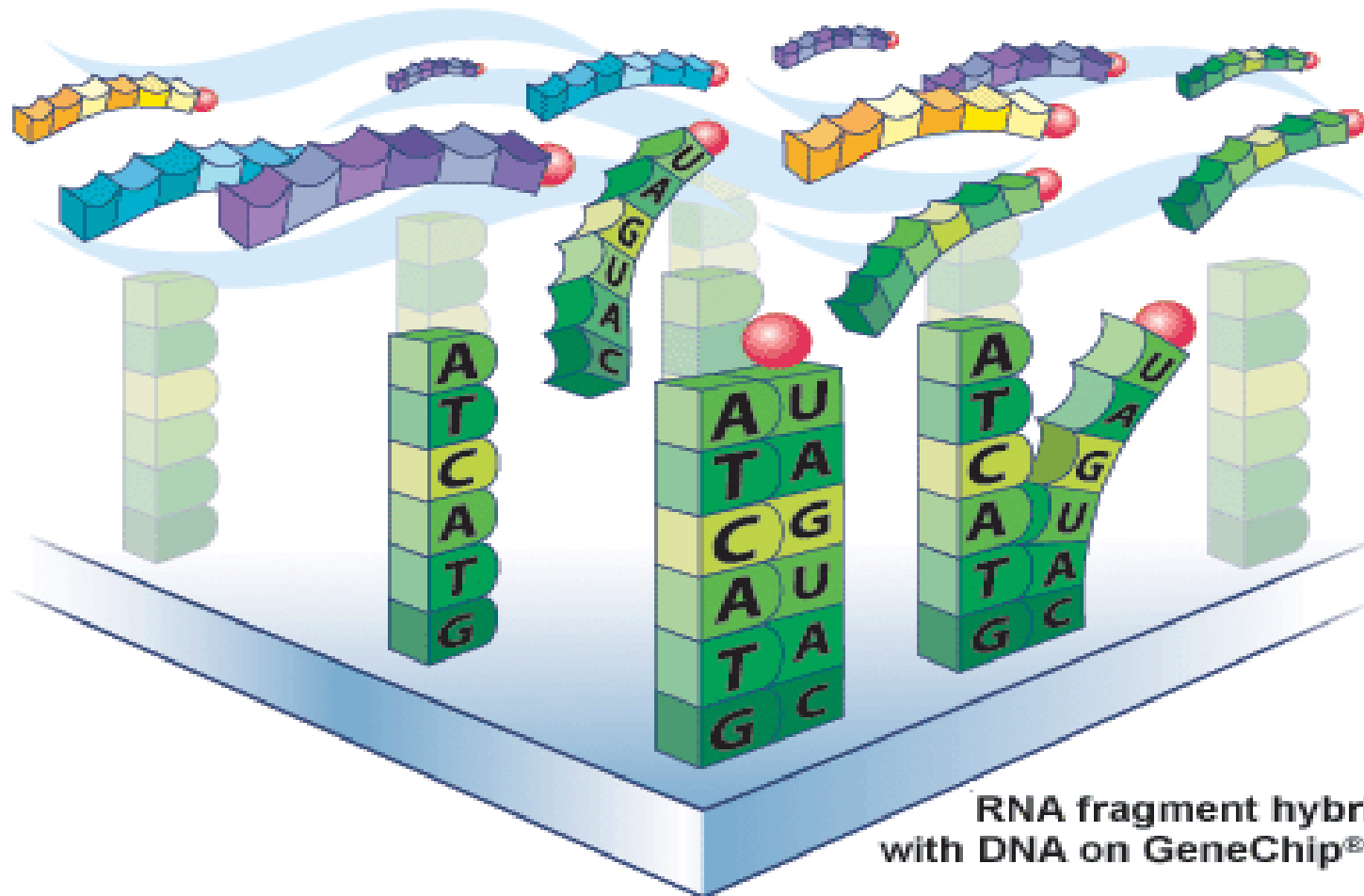
mRNA auf Microarray



Auf dem Microarray

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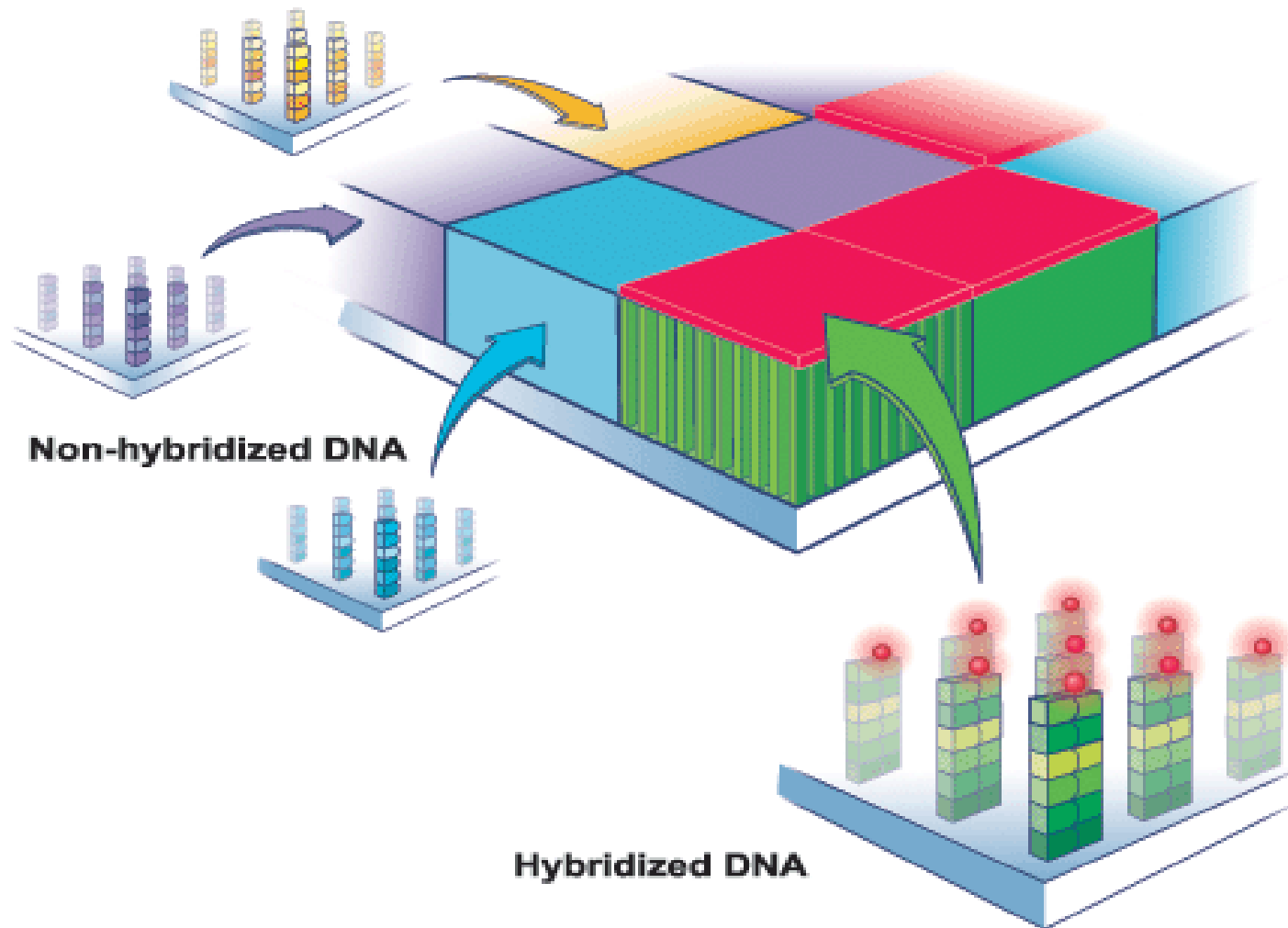
RNA fragments with fluorescent tags from sample to be tested



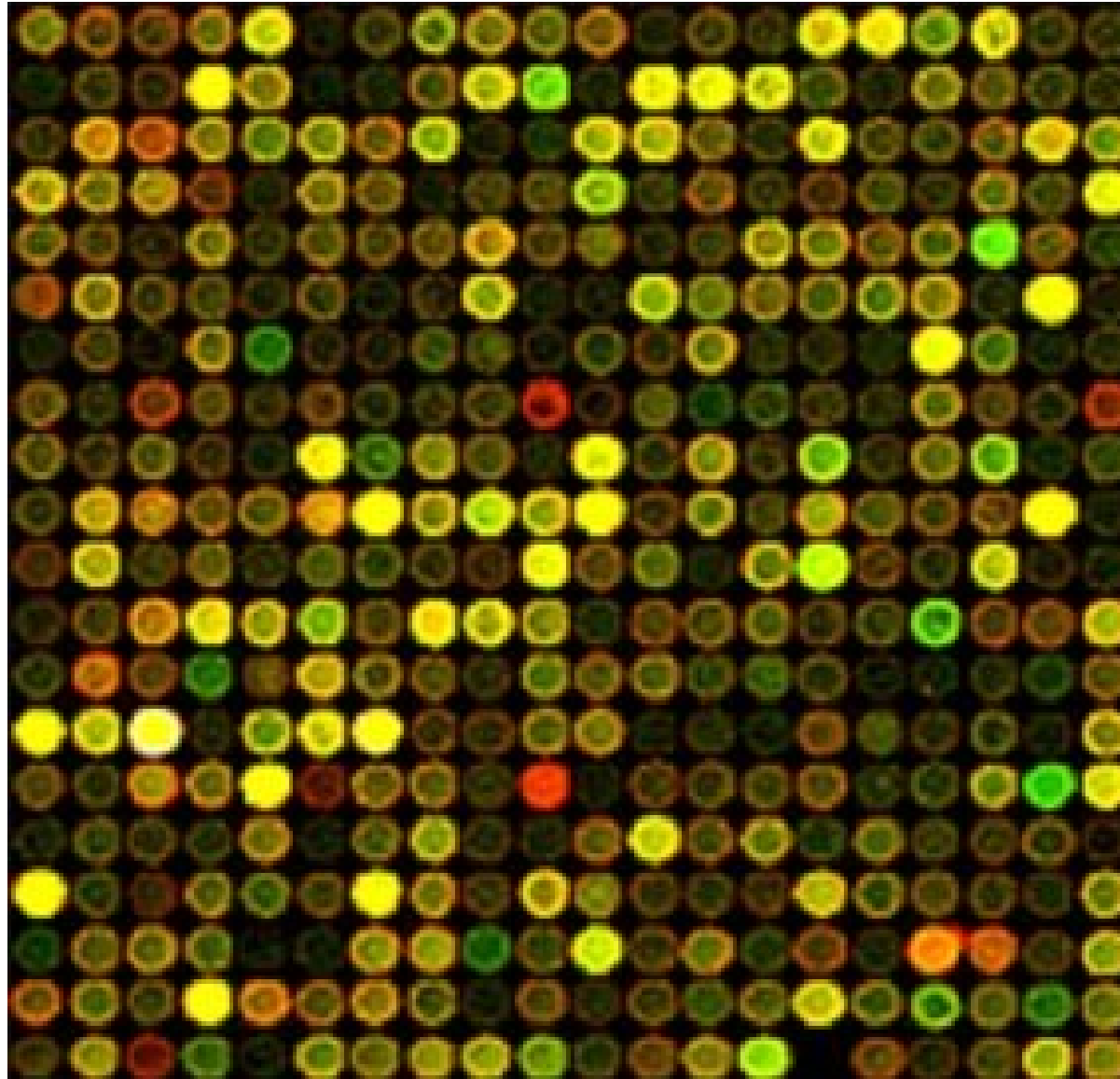
Voila: Ein Feuerwerk!

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Shining a laser light at GeneChip® array causes
tagged DNA fragments that hybridized to glow

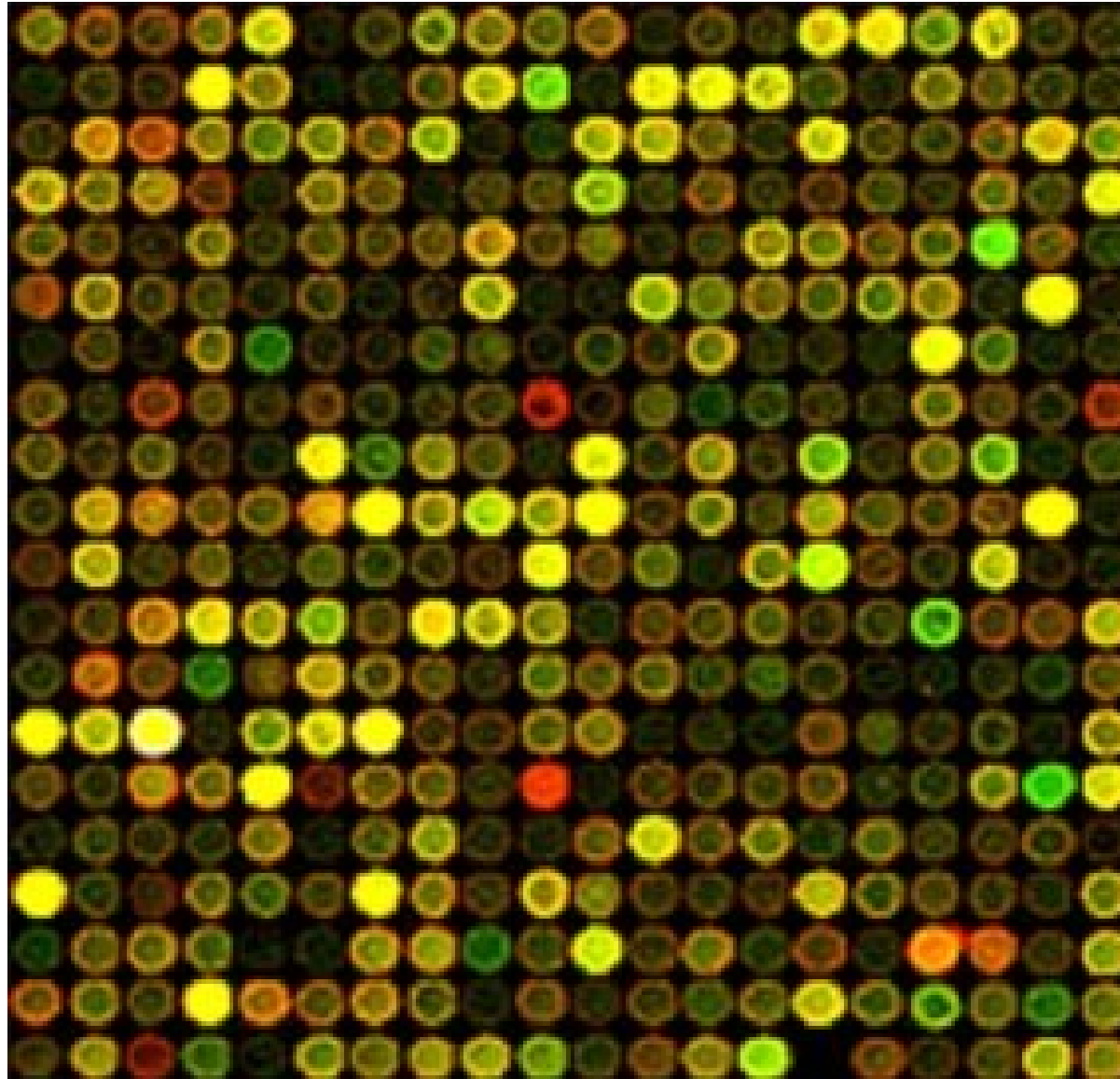


Helligkeit = Aktivität des Gens



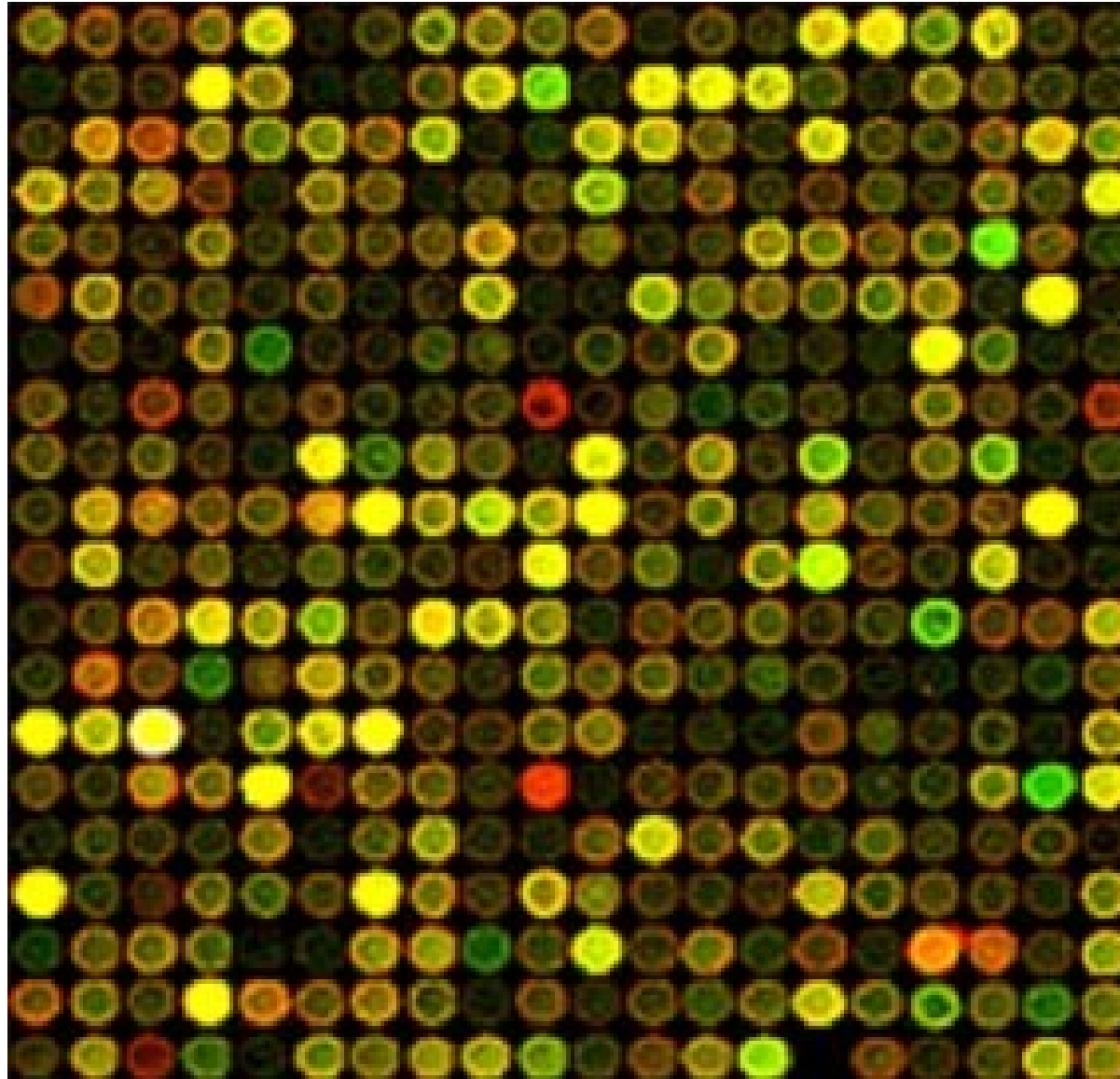
Helligkeit = Aktivität des Gens

Gen 5 sehr aktiv



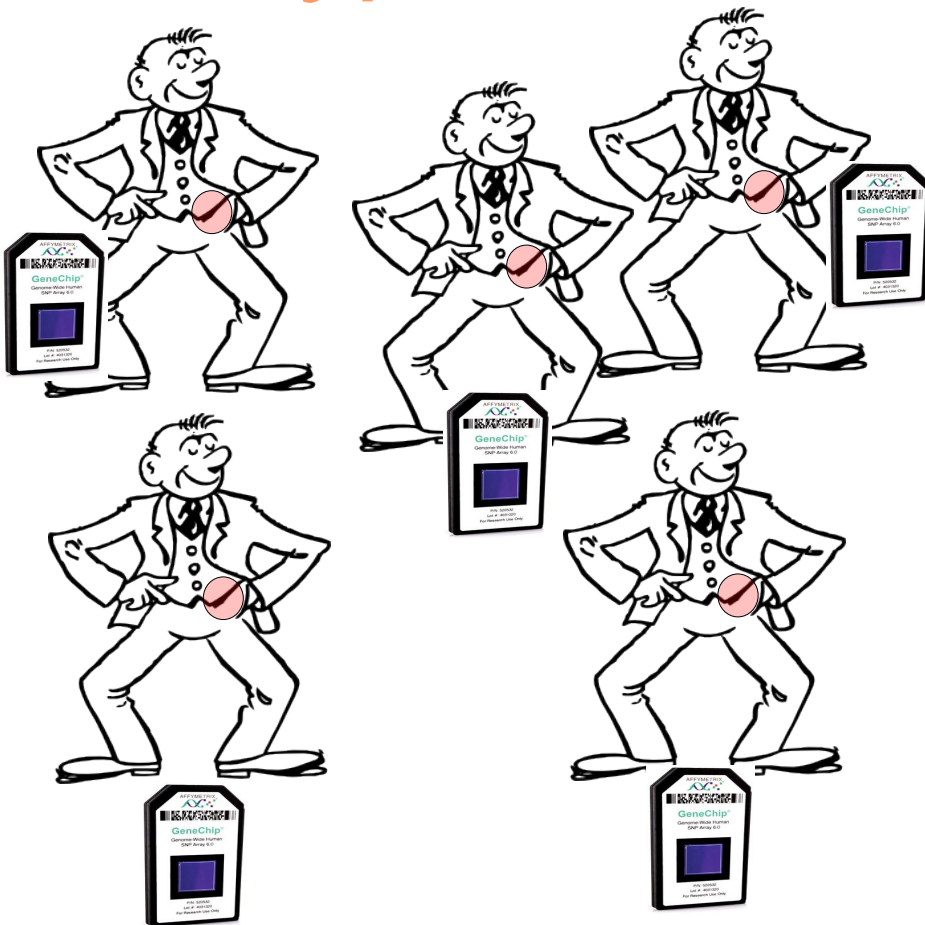
Helligkeit = Aktivität des Gens

Gen 6 nicht aktiv

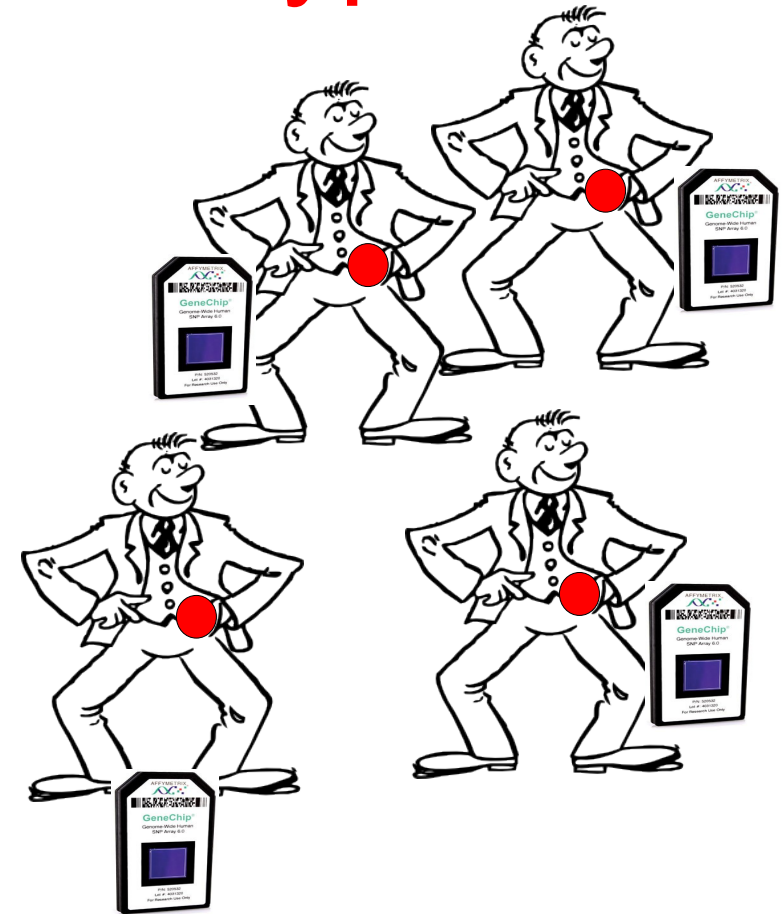


Für jeden Patienten ein Microarray

Typ 1



Typ 2



Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

Ist Gen 1 bei **Typ 2-Tumorzellen**
signifikant aktiver?

Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

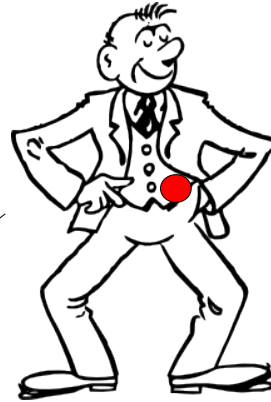
Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

Ist Gen 1 bei **Typ 2-Tumorzellen**
signifikant aktiver?

Falls ja: Gen 1 kann **Typ1-Tumor** und **Typ-2 Tumor**
unterscheiden!

Falls ja:



Gen 1 nicht aktiv

Gen 1 aktiv

Typ 1

Typ 2

~~Chemotherapie~~

Chemotherapie

Microarray: Aktivität aller Gene in der Zelle

Typ 1

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4	Pat. 5
1	2.1	1.3	1.9	1.2	1.4
2	2.4	2.3	2.5	2.1	2.0
...					
50000					

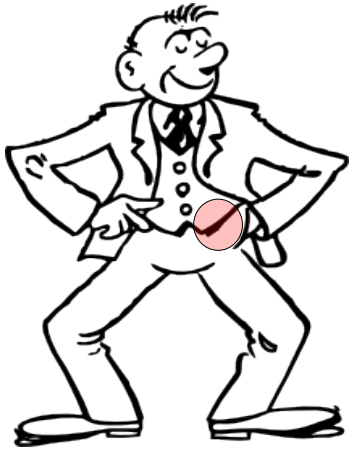
Typ 2

Gen	Pat. 1	Pat. 2	Pat. 3	Pat. 4
1	1.9	2.5	2.4	2.9
2	2.3	2.2	2.4	2.1
...				
50000				

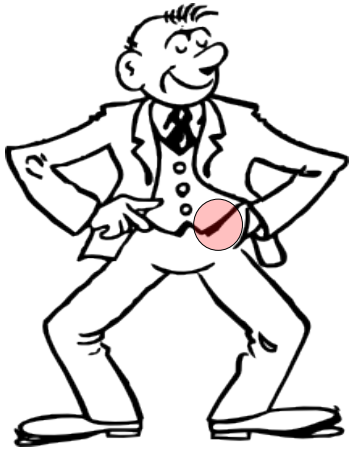
Ist Gen X bei **Typ 2-Tumorzellen**
signifikant aktiver?

Ungepaarter t-Test

Happy End !



Happy End !



Happy End !

