

# Cocinando un genoma

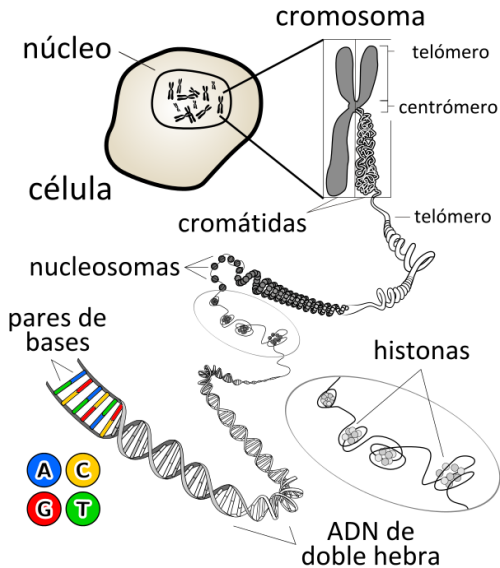
@fjuizruano

Granada, 14 de Diciembre de 2013

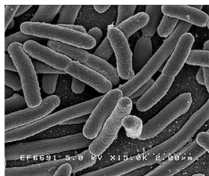


- 1 Antes
- 2 Durante
- 3 Después

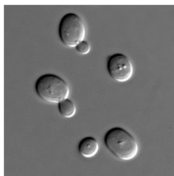
- 1 Antes
- 2 Durante
- 3 Después



# Genomas secuenciados (año 2000)



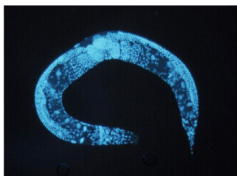
**1-10 Mb**



**12 Mb**



**157 Mb**



**100 Mb**



**130 Mb**



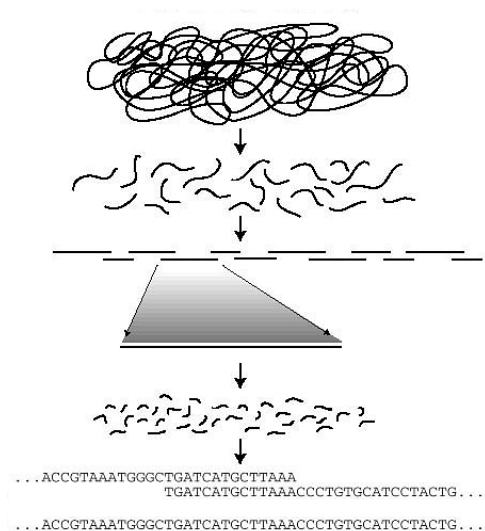
**¡3200 Mb!**

Wikipedia (Genome), Commons Wikimedia

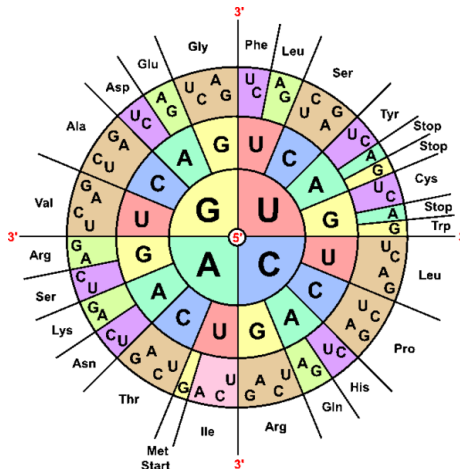
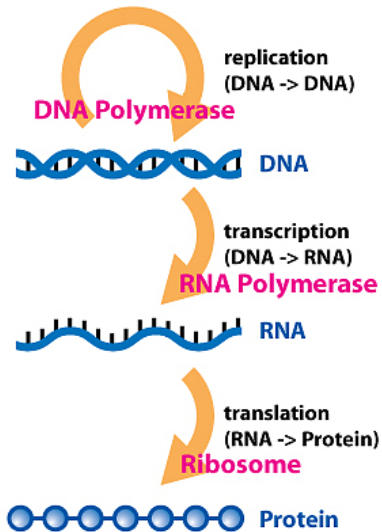
- 1 Antes
- 2 Durante
- 3 Después



# Sequenciación y ensamblaje



## Anotación





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picture-alliance 26/06/2000



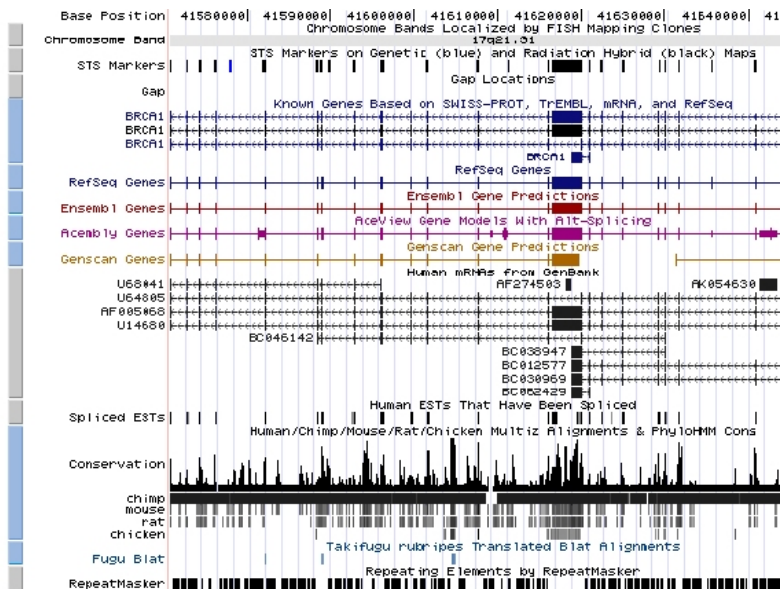


picture-alliance 26/06/2000





picture-alliance 26/06/2000

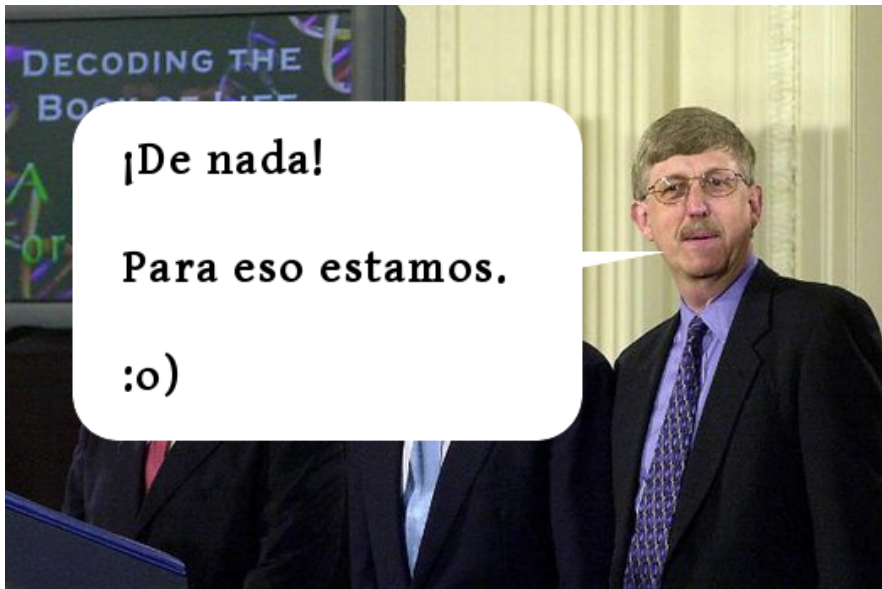




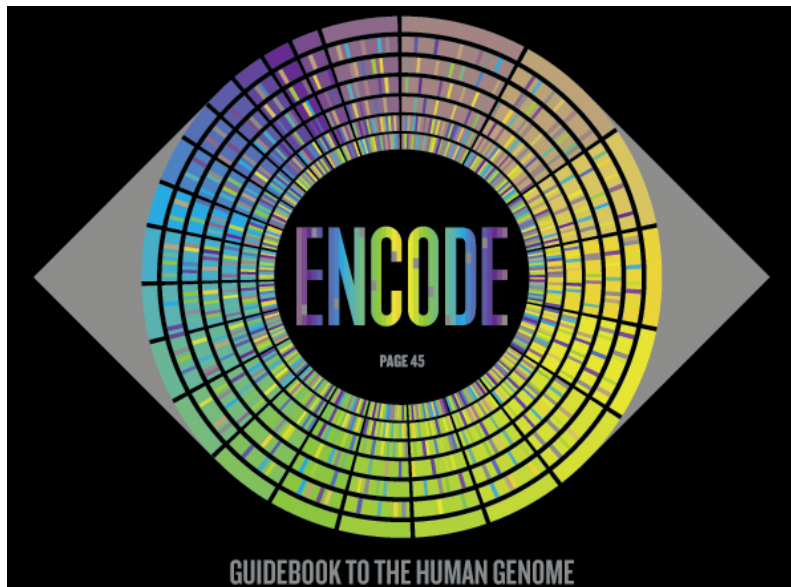
**¡Illo, Illo, Illo!**

**¡Que no son 100.000!**

**¡Que son 20.000 genes!**



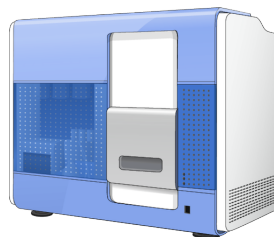
picture-alliance 26/06/2000



Nature 6/09/2012



1 Antes



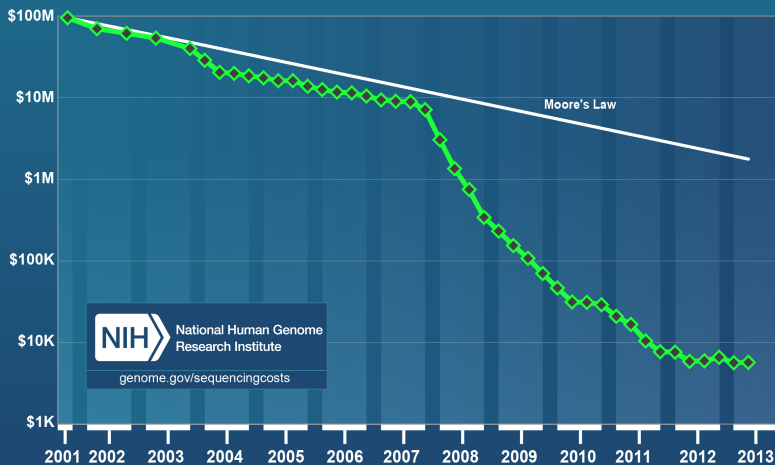
2 Durante

3 Después



Commons Wikimedia

## Cost per Genome



National Human Genome Research Institute



# Resecuenciación: SNP y GWAS

P L N I E V P K I S L H S L I L D \* F S A V S F L D V S S V R G L K

5' -CCTCTCAACATTGAGGTCCCAAAATCAGCCTCCACAGCCTCATTCTCGACTTTTCAGCAGTGCCTTTCTTGATGTTTCTTCAGTGAGGGGCCTAAA-3'  
 3' -GGAGAGTTGTAACCTCAGGGGTTTGTAGTCGGAGGTGTCGGAGTAAGAGCTGAAAAGTCGTACAGGAAAGAACTACAAAGAAGTCACTCCCGGAATT-5'

# Resecuenciación: SNP y GWAS

P L N I E V P K I S L H S L I L <sup>\*</sup>D F S A V S F L D V S S V R G L K

5' -CCTCTCAACATTGAGGTCCCAAAATCAGCCTCCACAGCCTCATTCTC**G**ACTTTTCAGCAGTGCCTTTCTTGATGTTTCTTCAGTGAGGGGCCTAAA-3'  
 3' -GGAGAGTTGTAACCTCAGGGGTTT**T**AGTCGGAGGTGTCGGAGTAAGAG**C**TGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTCCCGGAATT-5'  
 3' -GGAGCGTTGTAACCTCAGGGGTTT**T**AGTCGGAGGTGTCGGAGTAAGAG**T**-5'

# Resecuenciación: SNP y GWAS

P L N I E V P K I S L H S L I L <sup>\*</sup> D F S A V S F L D V S S V R G L K

5' -CCTCTCAACATTGAGGTCCTCCAAAATCAGCCTCCACAGCCTCATTCTC**G**ACTTTTCAGCAGTGCCTTTCTTGATGTTTCTTCAGTGAGGGGCCTTAAA-3'  
 3' -GGAGAGTTGTAACCTCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAG**C**TGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTCCCGGAATTT-5'  
 3' -GGAGCGTTGTAACCTCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAG**T**T-5'  
 3' -GTTGTAACCTCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAG**T**TGAAA-5'

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PNAS 106(45), 19096-19101

# Resecuenciación: SNP y GWAS

P L N I E V P K I S L H S L I L <sup>\*</sup>D F S A V S F L D V S S V R G L K

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5' -CCTCTCAACATTGAGGTCCCAAAATCAGCCTCCACAGCCTCATTCTCGACTTTTCAGCAGTGCCTTTCTTGATGTTTCTTCAGTGAGGGGCCTTAAA-3'
3' -GGAGAGTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGCTGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTCCCCGGAATTT-5'
3' -GGAGCGTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTT-5'
    3' -GTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAA-5'
        3' -AACTCCAGGGTTTTCGTTCGGAGGGGTCGGAGTAAGAGTTGAAAAGTCGT-5'
  
```

## Resecuenciación: SNP y GWAS

P L N I E V P K I S L H S L I L <sup>\*</sup> D F S A V S F L D V S S V R G L K

```

5' -CCTCTCAACATTGAGGTCCCCAAATCAGCCTCCACAGCCTCATTCTCGACTTTTCAGCAGTGTCTTTCTTGATGTTTCTTCAGTGAGGGGCCTTAAA-3'
3' -GGAGAGTTGTAACCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGCTGAAAAGTCGTCACAGGAAAGAAGTACAAAGAAGTCACTCCCCGGAATTT-5'
3' -GGAGCGTTGTAACCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTT-5'
  3' -GTTGTAACCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAA-5'
    3' -AACTCCAGGGTTTTTCGTCGGAGGGGTGCGAGTAAGAGTTGAAAAGTCGT-5'
      5' -ctccaggggttttagtcggaggtgtcggagtaagagtgtgaaaagtcgtca-3'
        3' -CCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTACA-5'
          5' -gggggttttagtcggaggtgtcggagtaagagtgtgaaaagtcgtcacagga-3'
            3' -TTTTGGTGGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAG-5'
              3' -TTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAA-5'
                3' -GTCGGAGGCGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAAGTAC-5'
                  5' -cggaggtgtcggagtaagagtgtgaaaagtcgtcacaggaagaactacaa-3'
                    3' -GGGGGGTTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAAGTACAAA-5'
                      5' -gaggtgtcggagtaagagatgaaaagtcgtcacaggaagaactacaaag-3'
                        3' -GGGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAAGTACAAAGAAG-5'
                          5' -tcggagtaagagtgtgaaaagtcgtcacaggaagaactacaaagaagtca-3'
                            3' -GAGTAAGAGTAGAAAAGTCGTCACAGGAAAGAAGTACAAAGAAGTCACTC-5'
                              5' -agagttgaaaagtcgtcacaggaagaactacaaagaagtcactccccgg-3'
                                3' -GTTGAAAAGTCGTCACAGGAAAGAAGTACAAAGAAGTCACTCCCCGGAAT-5'

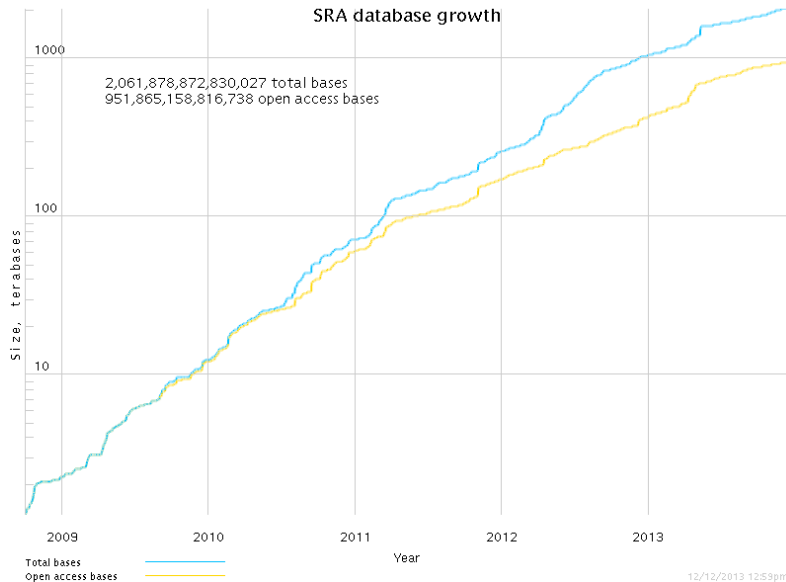
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## Resecuenciación: SNP y GWAS

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      P L N I E V P K I S L H S L I L * D F S A V S F L D V S S V R G L K
      P L N I E V P K I S L H S L I L N F S A V S F L D V S S V R G L K
5' -CCTCTCAACATTGAGGTCCCCAAATCAGCCTCCACAGCCTCATTCTCGACTTTTCAGCAGTGTCTTTCTTGATGTTTCTTCAGTGAGGGGCCTTAAA-3'
3' -GGAGAGTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGCTGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTCCCCGAATTT-5'
3' -GGAGCGTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTT-5'
      3' -GTTGTAACTCCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAA-5'
      3' -AACTCCAGGGTTTTTCGTCGGAGGGGTCGGAGTAAGAGTTGAAAAGTCGT-5'
      5' -ctccaggggttttagtcggaggtgtcggagtaagagttgaaaagtcgtca-3'
      3' -CCAGGGGTTTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTACA-5'
      5' -gggggttttagtcggaggtgtcggagtaagagttgaaaagtcgtcacagga-3'
      3' -TTTTGGTGGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAG-5'
      3' -TTTAGTCGGAGGTGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAA-5'
      3' -GTCGGAGGCGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAACTAC-5'
      5' -cggaggtgtcggagtaagagttgaaaagtcgtcacaggaagaactacaa-3'
      3' -GGGGGGTTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAACTACAAA-5'
      5' -gaggtgtcggagtaagagatgaaaagtcgtcacaggaagaactacaaag-3'
      3' -GGGTCGGAGTAAGAGTTGAAAAGTCGTCACAGGAAAGAACTACAAAGAAG-5'
      5' -tcggagtaagagttgaaaagtcgtcacaggaagaactacaaagaagtca-3'
      3' -GAGTAAGAGTAGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTC-5'
      5' -agagttgaaaagtcgtcacaggaagaactacaaagaagtcactccccgg-3'
      3' -GTTGAAAAGTCGTCACAGGAAAGAACTACAAAGAAGTCACTCCCCGAAT-5'

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## SRA database



Mine Safety and Health Administration





<http://bioinformatiquillo.wordpress.com>

#amoachalo