

History, present and future of food authentication at DNA level.



Modul č. 1: Animal genetics

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Food Safety

Food Adulteration



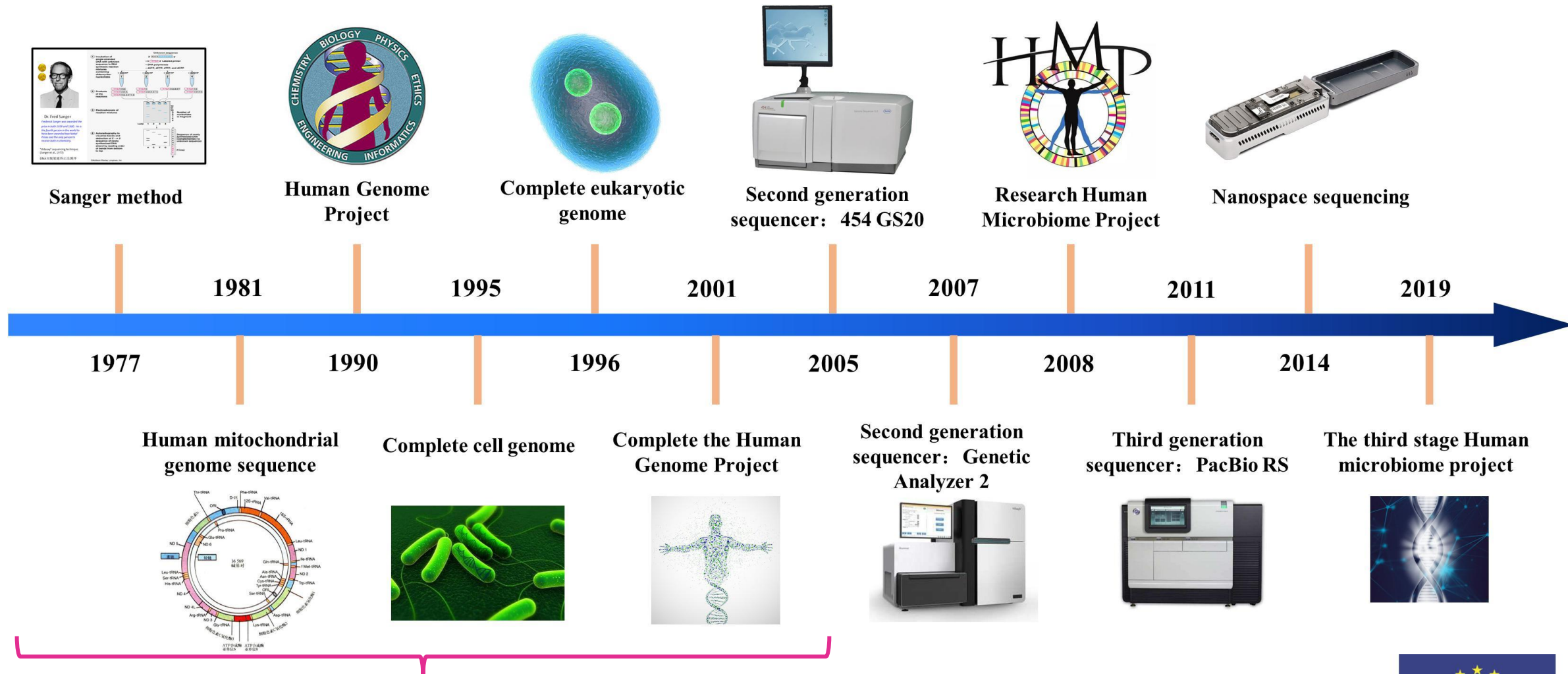
Food Traceability

Erasmus+ project 2021-1-SK01-KA220-HED-000032068



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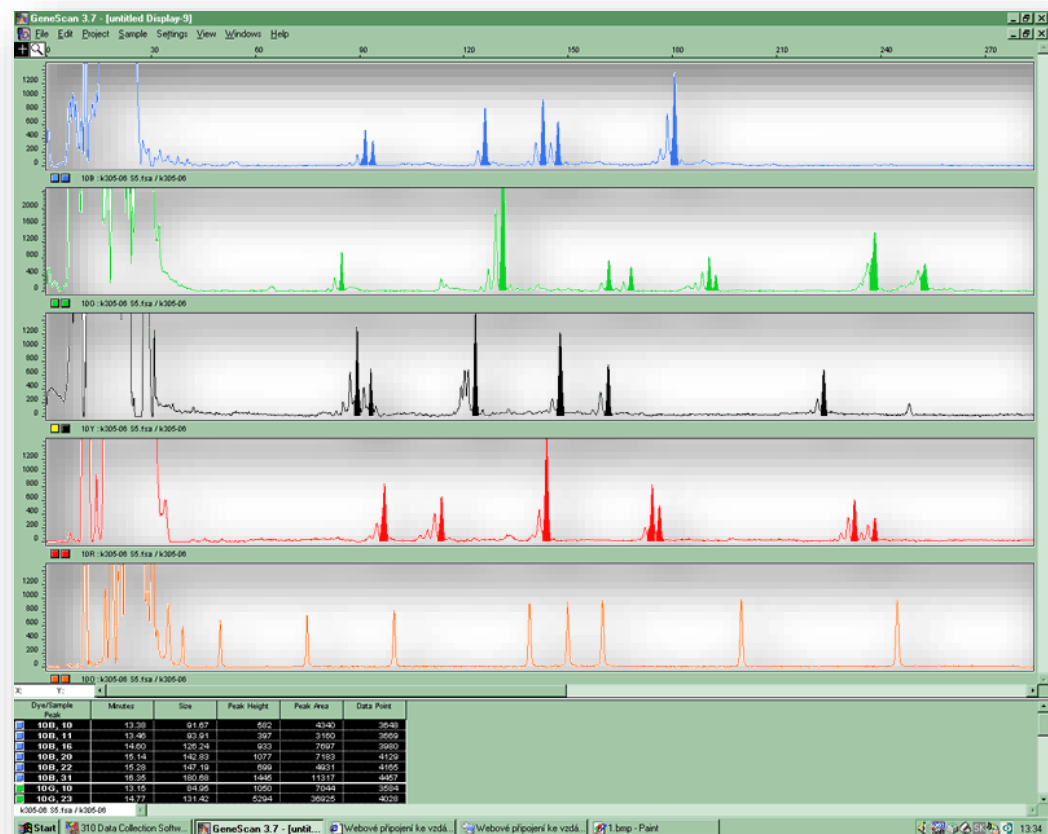




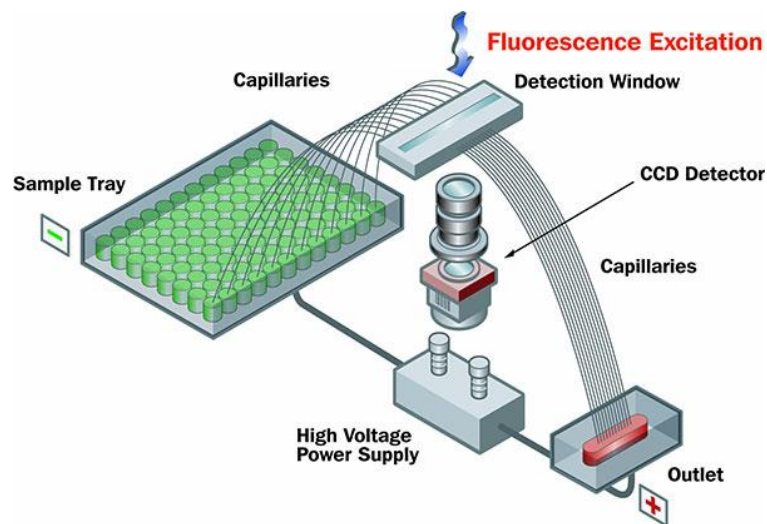
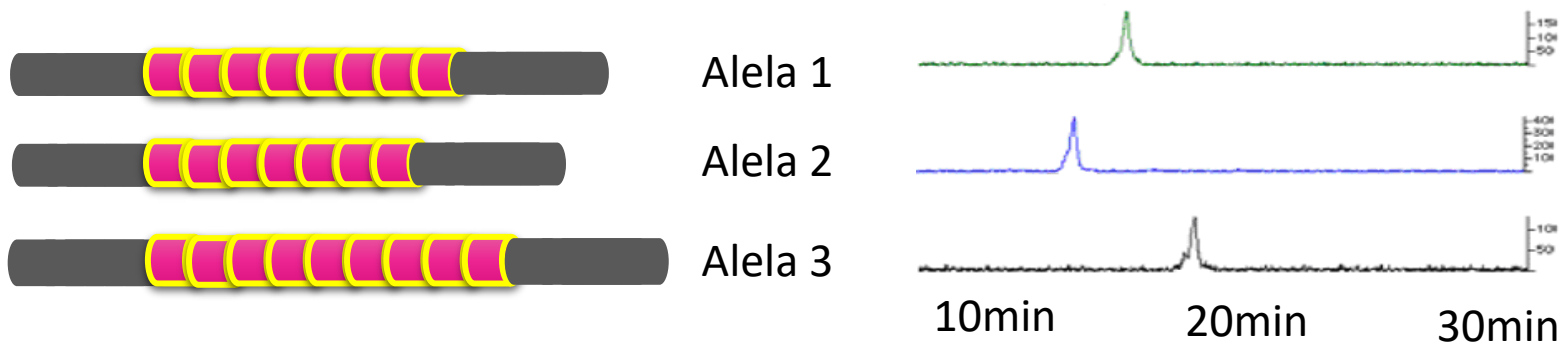
Source: Yang, Aimin & Zhang, Wei & Wang, Jiahao & Yang, Ke & Han, Yang & Zhang, Limin. (2020). Review on the Application of Machine Learning Algorithms in the Sequence Data Mining of DNA. *Frontiers in Bioengineering and Biotechnology*. 8. 1032. 10.3389/fbioe.2020.01032.

Identification on individual level

175/05	206/06	175/00	
148.4 162.2	147.8 161.6	148.1 153.5	AHT4
H O	H O	H K	
134.4 140.8	131.8 134.1	132.3 140.8	AHT5
K N	J K	J N	
109.5 111.5	95.17 109.7	95.24 109.6	ASB17
N O	G N	G N	
240.0 254.5	245.3 253.5	246.5 254.8	ASB2
K R	N R	N R	
189.5	191.7	191.7 207.5	ASB23
J K	K	K S	
245.6	237.6 245.2	237.8 245.6	CA425
N	J N	J N	
173.0	172.3	173.3	HMS1
I J	I J	I	
225.7	225.4	225.8	HMS2
L	L	L	
152 167	151.6 166.6	151.9 166.8	HMS3
I P	I P	I P	
163.3 169.3	163.1 169.4	169.4	HMS6
M P	M P	P	
177.6 183.2	173.3 183.1	173.4 179.4	HMS7
L O	J O	J M	
129.3	128.5 133.5	129.3 133.6	HTG4
K M	K M	K M	
84.47 90.33	89.83	90.14	HTG6
G J	J	J	
128.5	128.5	120.3 128.6	HTG7
O	O	K O	
101.1 111.1	95.5 109.5	96.87 105.0	HTG10
M R	J Q	K O	
143.9	143.4	143.7 154.4	LEX3
H	H	H M	
97.14 99.37	96.91	97.08 99.36	VHL20
M N	M	M N	
30.9.2005	26.5.2006	9.10.2007	DatAnal

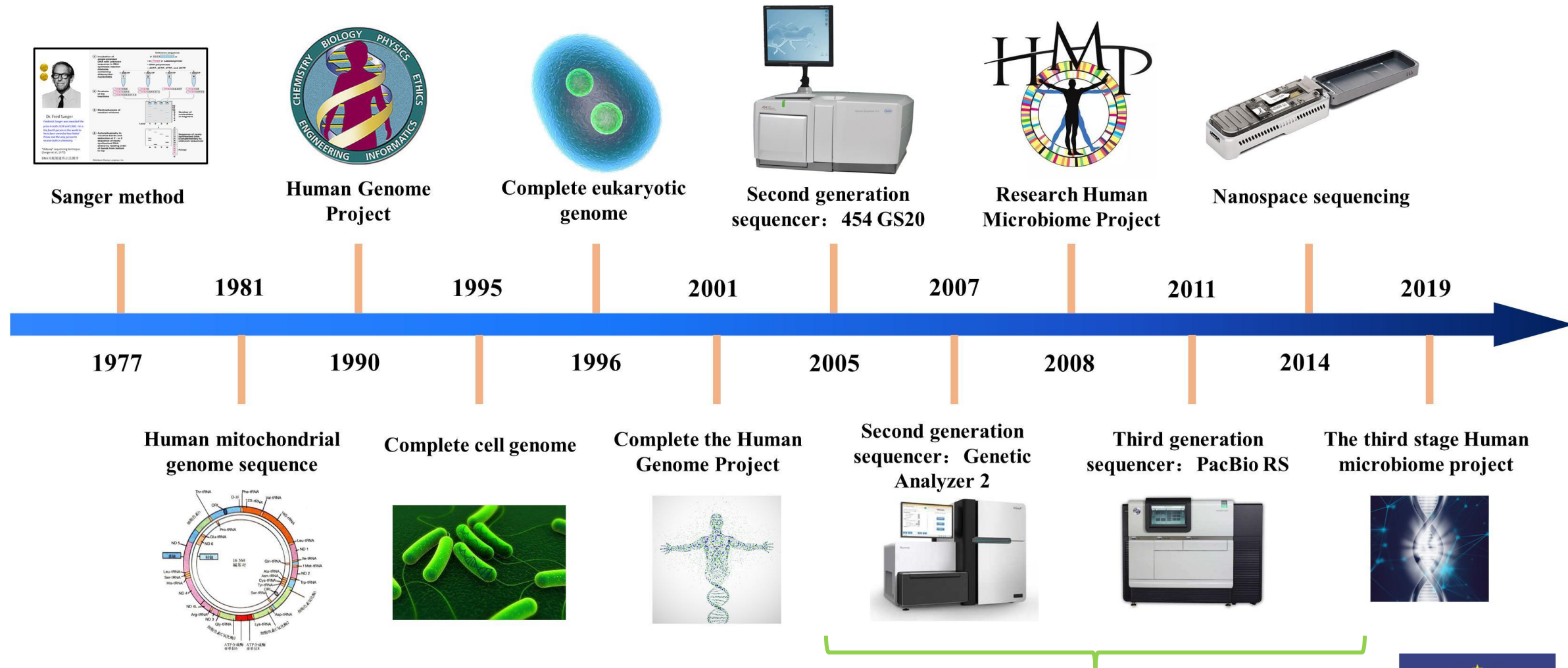


Capillary electrophoresis

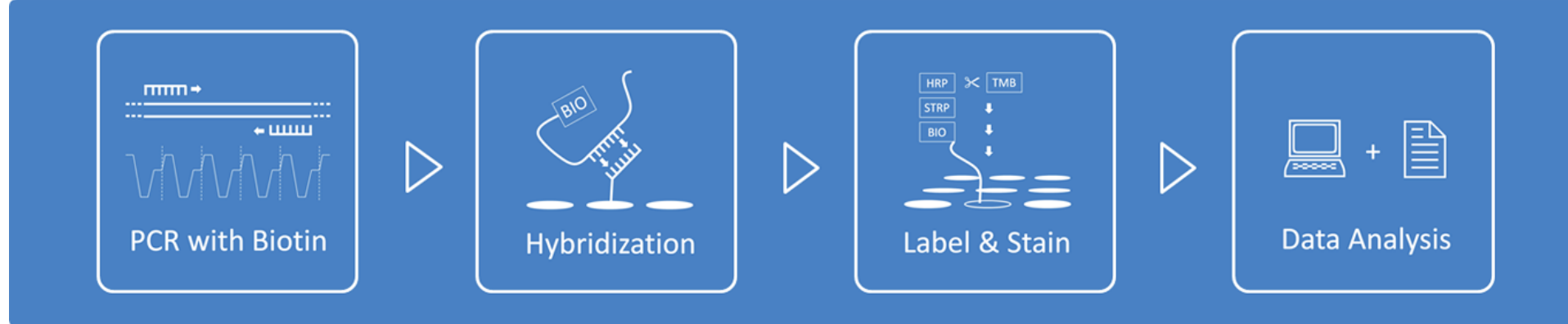


Source: <https://www.slideserve.com/orinda/protein-pro-parallel-capillary-electrophoresis-system-overview>





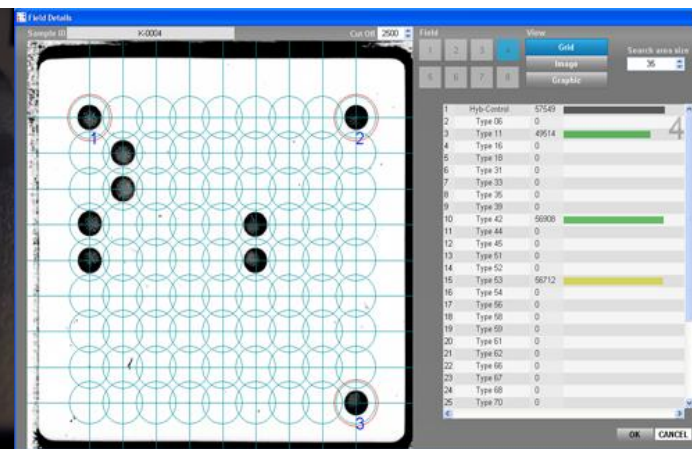
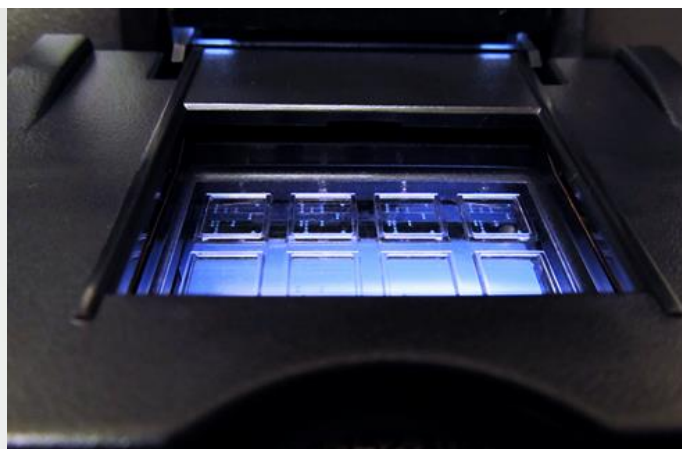
Source: Yang, Aimin & Zhang, Wei & Wang, Jiahao & Yang, Ke & Han, Yang & Zhang, Limin. (2020). Review on the Application of Machine Learning Algorithms in the Sequence Data Mining of DNA. *Frontiers in Bioengineering and Biotechnology*. 8. 1032. 10.3389/fbioe.2020.01032.



90 min.

45 min.

5 min.



Source: Drdolová, Zuzana & Golian, Jozef & Čurlej, Jozef & Marsalkova, Lenka. (2017). Verification of animal species in ham and salami by DNA microarray and Real time PCR methods. Potravinarstvo. 11. 10.5219/831.

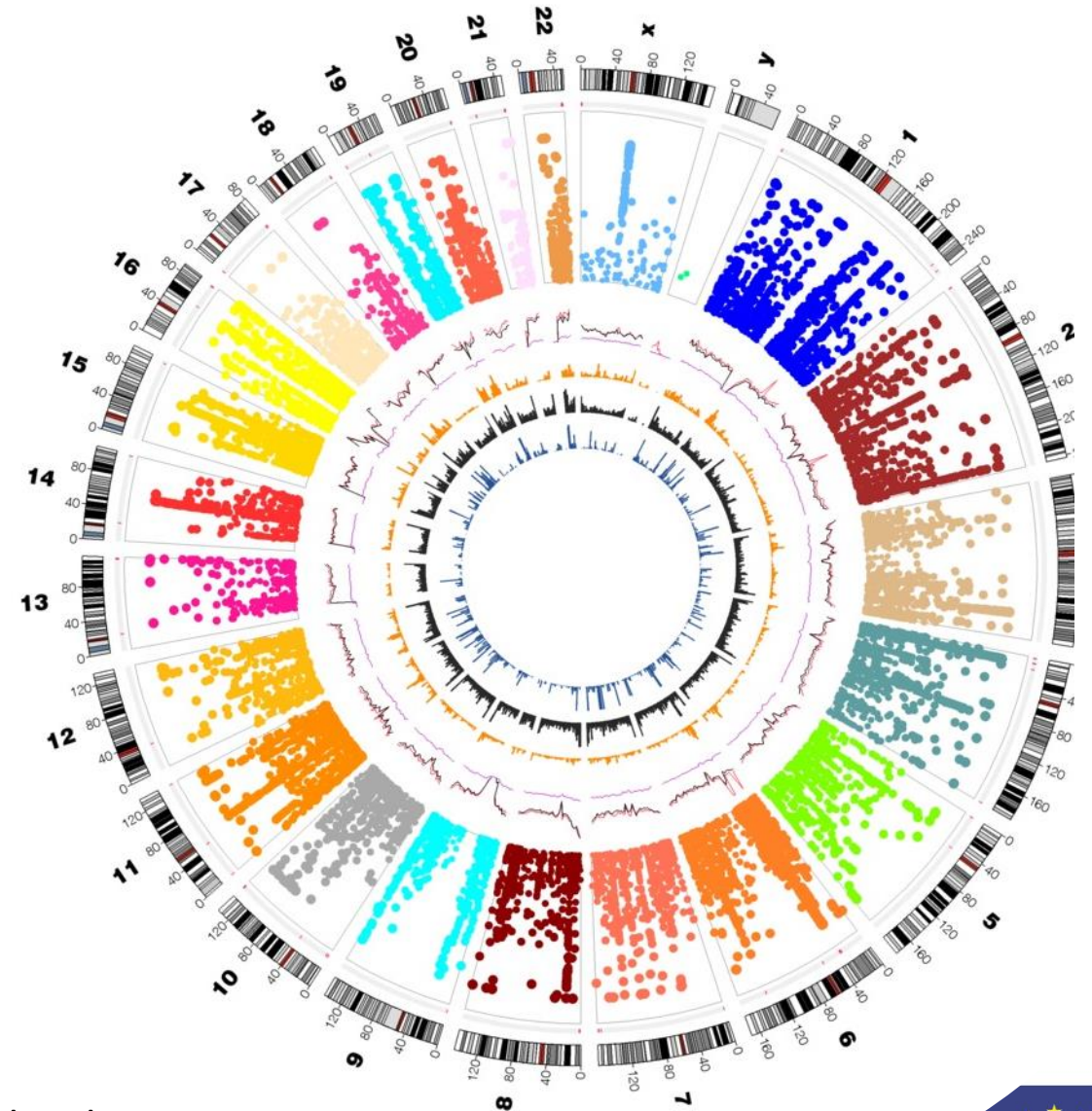


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GENOMICS

Genomics is the study of whole genomes of organisms, and incorporates elements from genetics. **Genomics** uses a combination of recombinant DNA, DNA sequencing methods, and bioinformatics to sequence, assemble, and analyse the structure and function of genomes.

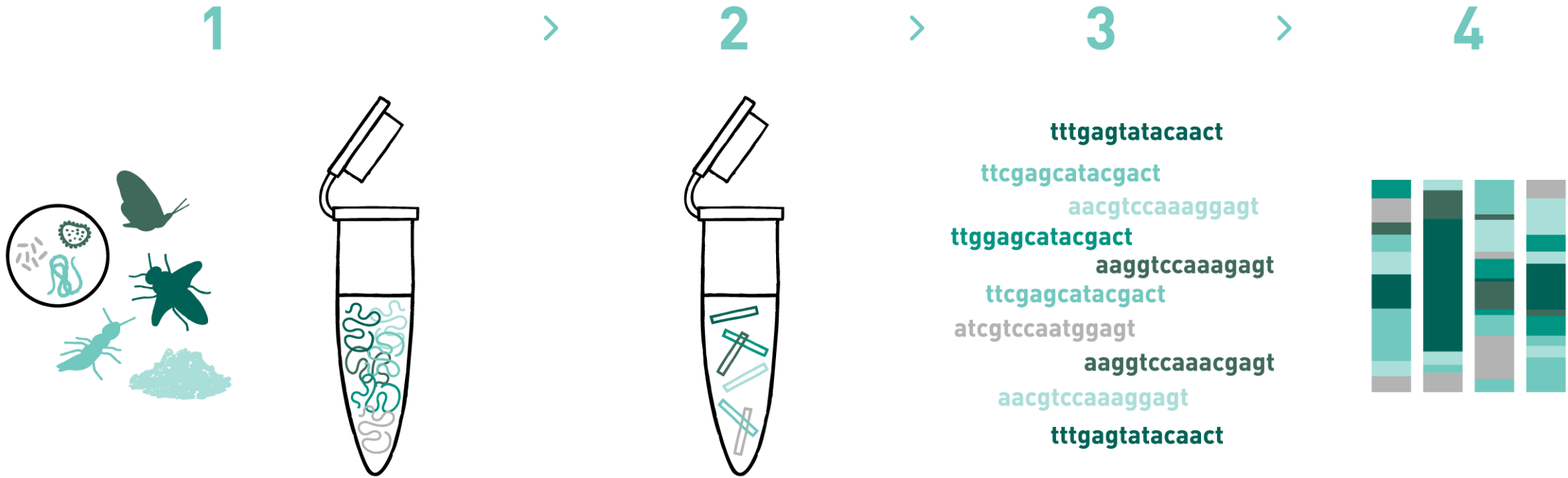
Source: https://www.hku.hk/press/news_detail_13152.html





Source: <https://upselling.biz.id/oxford-nanopore-technologies-cost/>

METABARCODING



Source: <https://www.allgenetics.eu/services/genomic-solutions-for-your-company/environment/biodiversity-monitoring-by-dna-metabarcoding/>

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Thank you for your attention!

This presentation has been supported by the Erasmus+ KA2 Cooperation Partnerships grant no. 2021-1-SK01-KA220-HED-000032068 "Innovation of the structure and content of study programs in the field of animal genetic and food resources management with the use of digitalisation - Inovácia obsahu a štruktúry študijných programov v oblasti manažmentu živočíšnych genetických a potravinových zdrojov s využitím digitalizácie". The European Commission support for the production of this presentation does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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