


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPONSJI

UNIA EUROPEJSKA
 FUNDUSZ SPRAWOZDAWCZY

"PRO: Uniwersytet Gdańskie (Międzynarodowe Kołaboracje w Uniwersytecie Gdańskim poprzez współpracę z Uniwersytetem Houston-Dowtown)"
 Projekt współfinansowany ze środków Unii Europejskiej w ramach Europejskiego Funduszu Społecznego

Introduction to Human Genetics

Module 1 Mendelian genetics

Mendel's crosses


UNIWERSYTET GDAŃSKI

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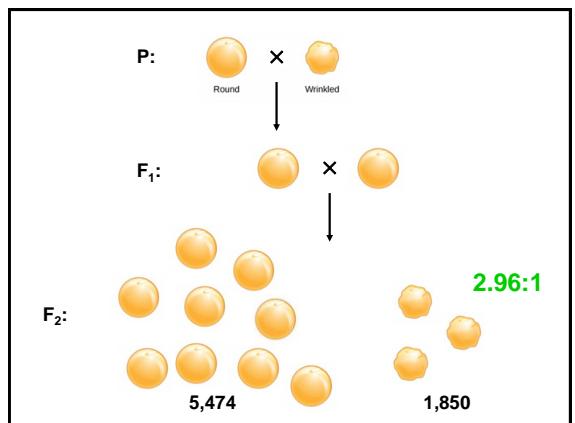
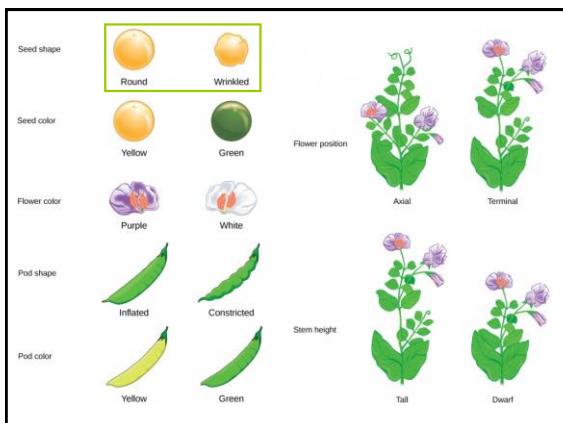
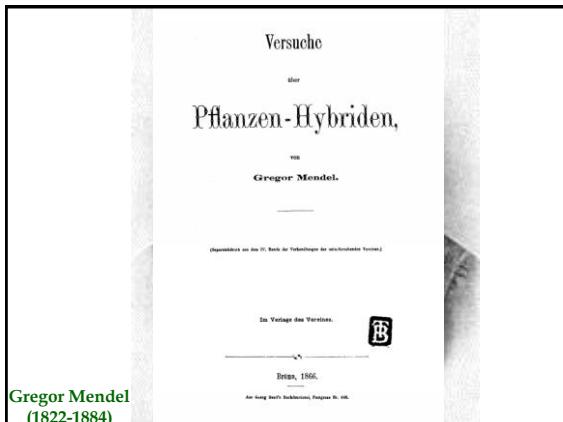

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Mendel's scientific approach to the study of heredity



Gregor Mendel
(1822-1884)

- well characterized materials
- accurate quantitative records
- data analysis => model



The Results of Mendel's Garden Pea Hybridizations

Characteristic	Contrasting P ₀ Traits	F ₁ Offspring Traits	F ₂ Offspring Traits	F ₂ Trait Ratios
Flower color	Violet vs. white	100 percent violet	705 violet 224 white	3.15:1
Flower position	Axial vs. terminal	100 percent axial	651 axial 207 terminal	3.14:1
Plant height	Tall vs. dwarf	100 percent tall	787 tall 277 dwarf	2.84:1
Seed texture	Round vs. wrinkled	100 percent round	5,474 round 1,850 wrinkled	2.96:1
Seed color	Yellow vs. green	100 percent yellow	6,022 yellow 2,001 green	3.01:1
Pea pod texture	Inflated vs. constricted	100 percent inflated	882 inflated 299 constricted	2.95:1
Pea pod color	Green vs. yellow	100 percent green	428 green 152 yellow	2.82:1

Mendel's conclusions

- UNIT FACTORS IN PAIRS
- DOMINANCE / RECESSIVENESS
- SEGREGATION

Definitions

Gene

The fundamental unit of heredity and the basic structural and functional unit of genetics.

Dominant trait

The trait expressed in the F₁ (or heterozygous) condition.

Phenotype

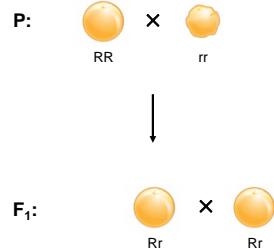
The observable properties of an organism.

Genotype

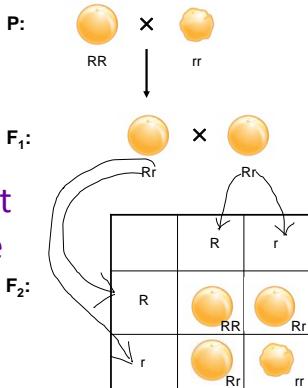
The specific genetic constitution of an organism.

Allele

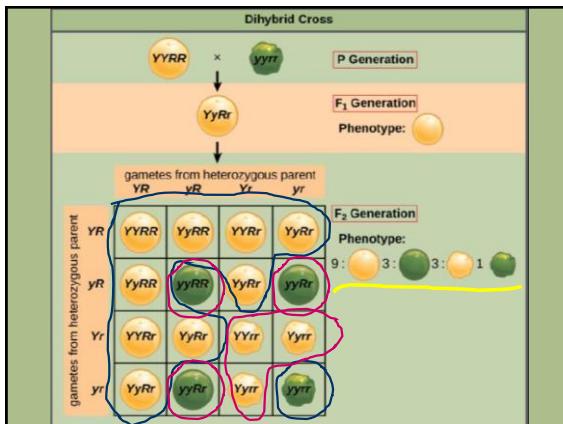
One of the possible alternative forms of a gene, usually distinguished from other alleles by its phenotypic effect.



Segregation
The separation of members of a gene pair from each other during gamete formation.



Studying the inheritance of two characters simultaneously



Variations on a Theme by Mendel

- incomplete dominance
- codominance
- multiple alleles
- epistasis