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Perspectives in Biology
and Medicine

In the Sat, Medium
not available!

Ravello 16, 17th

la préparation de la documentation ayant trait à ces discussions.

GENEVE, le 1960

MHO/PA/177/60

On the nature of the
ageing process.
Vol 45 pp. 30 – 45 (Jan) 59
Nat Acad of Sciences
(USA)

specialised)
~~specialised~~ vegetative
genes

specialised faults

Professor Szilard

The book you enquired about is now available for consultation in the WHO Library.

Maloodi

2.45 pm.

Refinements of the Theory - Specialized Vegetative Genes. - It appears likely that there exist genes which are not essential for the functioning of most of the somatic cells of the adult but each of which is essential for the functioning of one particular kind of specialized somatic cell. We shall call these genes "specialized vegetative" genes, and mutant forms of such genes we shall call "specialized faults".

.....

On this basis we may then expect that around 50 years of age there may become manifest, in such heterozygotes, symptoms of disease due to the insufficiency of the output of one kind of specialized cell. The inheritance of diseases of this class may be expected to show a marked degree of dominance.

Speaking more generally, we may expect to see in certain heterozygotes, late in life, narrowly circumscribed degenerative phenomena which are caused by specialized faults they have inherited.

.....

Arrangements for experiments along these lines are now under discussion.

Ageing theory (for Man m = 23)

$\frac{t_0}{\tau}$ is roughly prop. to $\sqrt{m}$

m is number of chromosome pairs

$\frac{1}{\tau}$ probability (per unit time) that a chromosome of the somatic cell suffers an ageing hit

$\frac{1}{\tau}$ is proportional $\frac{\sqrt{m}}{t_0}$

t_0 is life span of genetically perfect animal.

or τ = ~~to~~ proportional $\frac{t_0}{\sqrt{m}}$ (α)

~~[illegible]~~ 6 years $= \alpha \frac{100 \text{ years}}{\sqrt{23}}$

$\alpha = \frac{6\sqrt{23}}{100}$

$$\tau \simeq \frac{6}{100} \frac{t_0}{\sqrt{\frac{m}{23}}}$$

Sperm dilution

probab of fert. $= \alpha(1-q)$

$$q = e^{-\frac{n_0}{\text{dilution factor}}}$$

$$P_{dil} = \alpha\left(1 - e^{-\frac{n}{dil}}\right)$$

$$\frac{P_1}{P_2} = \frac{1 - e^{-\frac{n_1}{dil}}}{1 - e^{-\frac{n_2}{dil}}}$$

for high dilutions:

$$\frac{P_1}{P_2} = \frac{\frac{n_1}{dil}}{\frac{n_2}{dil}} = \frac{n_1}{n_2}$$

$$P_{conc} = \alpha\left(1 - e^{-n}\right)$$

$$P_{dil} = \alpha\left(1 - e^{-\frac{n}{D}}\right)$$

$$e^{n} \ll 1$$

$$\frac{P_{dil}}{P_{conc}} = 1 - e^{-\frac{n}{D}}$$

or $$e^{-\frac{n}{D}} = 1 - \frac{P_{dil}}{P_{conc}}$$

$$\frac{1}{1 - \frac{P_{dil}}{P_{conc}}} = e$$

$n = D$

$$n = D \ln \frac{1}{1 - \frac{P_{dil}}{P_{conc}}}$$

A ; $B_1(t_1)$, $B_2(t_2)$, $B_3(t_3)$

$$\left[\frac{a}{b_1}\right] = \alpha_1$$

$$\frac{\alpha_k}{\alpha_l} = e^{+\delta(t_k - t_l)}$$

α increases with age of b

for Man $\delta = \frac{1}{6}$

of ~~spermatogonia~~ [possible: fertile spermatozoa] control

of genetic material of spermatozoa

controls δ $\sqrt{t_2}$ is half the

value given above

δ for animals

$$\delta = \frac{1}{\tau} = \frac{100}{6\, t_0}\sqrt{\frac{m}{23}}$$

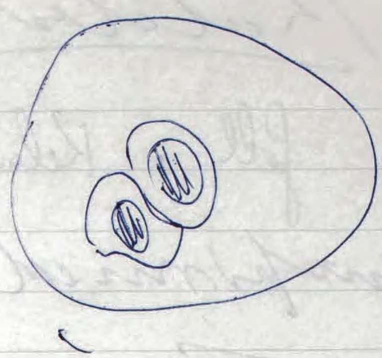
where t_0

$m =$

→ L 1000

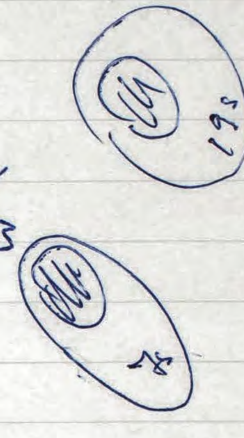
H 200

~~2000~~



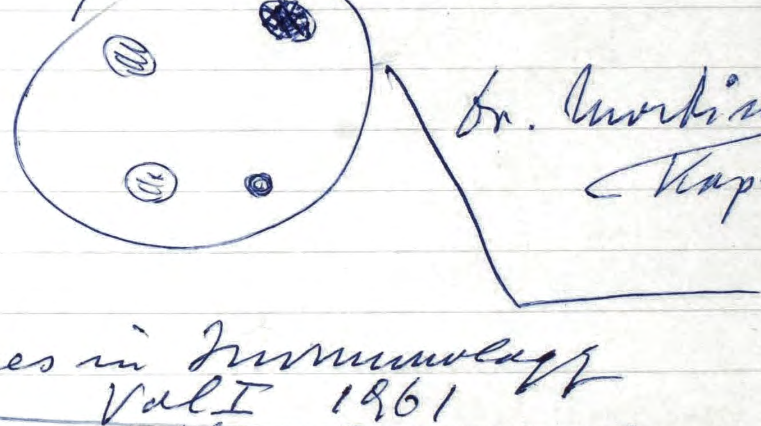
I a_{g_x} ⟶ L^* H^* H_2 H_3

II



Simonsen — British Journal of Exp Pathology

100



Dr. Martin Kaplan

Smith — Advances in Immunology Vol I 1961

10^9 molecules per rabbit enough to maintain tolerance

Destruction of Tolerance ~~Weigels~~ Weigle

Rubelli

IgG Gell a. Kelus — Hapten - BSA

confirmed by Permis

Ta

A | C
D | E

A A | C C
D D | E C

Gm^a+ Gm a−

Kunkel

A C
D D

$$P_{cone} = L\left(1 - e^{-n}\right)$$

$$P_{dil} = L\left(1 - e^{-\frac{n}{D}}\right)$$

$$\frac{P_{cone}}{P_{dil}} = \frac{\left(1 - e^{-n}\right)}{\left(1 - e^{-\frac{n}{D}}\right)}$$

$$\frac{P_{con}}{P_{dil}} = \frac{1}{1 - e^{-\frac{n}{D}}}$$

$$\frac{P_{dil}}{P_{cone}} = 1 - e^{-\frac{n}{D}}$$

$$+e^{-\frac{n}{D}} = 1 - \frac{P_{dil}}{P_{cone}}$$

$$e^{\frac{n}{D}} = \frac{1}{1 - \frac{P_{dil}}{P_{cone}}}$$

$$n = D \ln \frac{1}{1 - \frac{P_{dil}}{P_{cone}}}$$

$$1 + \frac{n}{D} \simeq 1 + \frac{P_{dil}}{P_{cone}}$$

$$n \simeq D \frac{P_{dil}}{P_{con}}$$

Barr M.L.:

neutrophil white blood cells
drumsticks
sex chromatin

WITSCHI
Recent Progr. Hormone
Res 6 1951

from p. 404
Principles of Human Gen
Curt Stern
II Ed (1960)
W. H. Freeman & Co
San Francisco
London

The embryonic gonad consists of a medulla and a cortex.
Six to seven weeks after fertilization embryo is still morphologically neutral.
Medulla ~ ovary
Cortex ~ testes

$\downarrow$

Ag $\longrightarrow$ C_{55}