

## LIST OF ABBREVIATIONS

A subsystem of ES for fulfillment of internal functions  
AES artificial ES  
Ag antigen (s)  
AIDS acquired immune deficiency syndrome  
B subsystem of ES for fulfillment of external functions  
C cancer (s)  
Ch. chapter (s)  
DNA deoxyribonucleic acid (basic constituent of the gene)  
E extraction subsystem of ES  
ES evolutionary system (s)  
FCCP foreign currency conversion problem (s)  
G genome subsystem of ES  
HA human activity (ies)  
HC health care  
HIV human immune-deficiency virus (es)  
HPO healthy part of an organism  
ICC immune competent cells  
Id-Aid idio-type anti-idio-typical interaction  
Ig immune-globulin  
iff if and only if  
IN immune network  
IS immune system  
ISO immune status of an organism  
JES joined ES  
Lc lymphocyte (s)  
MM mathematical model (s)  
NES natural ES  
OS organism subsystem (s)  
R recreation subsystem of ES  
RC reaction center (s)  
RPO remained part of an organism  
S science subsystem of ES  
s. section (s)  
SP specific rate  
STP science-technical progress  
Tef T effectors of hyper-sensitivity and T killers Lc  
Th T helpers Lc Ts T supressors Lc  
V. i. e. Volterra integral equation (s)  
WP work place (s)

## LIST OF NOTATIONS

- $\approx$  - approximately equal
  - $\asymp$  - asymptotically equal in order
  - $\lesssim, \gtrsim$  - asymptotically less, greater than  $\ll, \gg$  - by far less, greater than
  - $|$  - condition sign
  - $[x]$  - dimension of  $x$
  - $\times, \oplus$  - direct product, sum
  - $\emptyset$  - empty set
  - $\square$  - end of the proof
  - $\succ, \prec$  - follows (succeeds), precedes
  - $\infty$  - infinity sign
  - $\mathbb{I}$  - integers
  - $\cap, \cup$  - intersection, union
  - $\vee, \wedge$  - logical and, or
  - $M(f, R), m(f, R)$  - max, min  $|f|$  ( $t \in R$ )
  - $x = o(y), O(y)$  - mean  $x/y \rightarrow 0, x/y < C$ , where  $C$  is a positive constant when  $y \rightarrow 0$  or  $y \rightarrow \infty$
  - $x \sim y$  - means  $|x-y| < C|y|/t, t \rightarrow \infty$ , where  $C$  is a positive constant
  - $\|x\|$  - measure or norm of  $x$
  - $\in, \notin$  - member, not a member
  - $\mathbb{R}^n$  -  $n$ -dimensional Euclidean space
  - $\nexists$  - no existence sign
  - $\partial$  - partial derivative
  - $\prod, \sum$  - product, summation
  - $\subset, \supset$  - proper subset, superset
  - $f^{-1}$  - reciprocal function or operator for any function or operator  $f$
  - $(x, y)$  - scalar product of elements  $x$  and  $y$
  - $\rightarrow$  - tend to
  - $seq\ cl(A)$  - the collection of all limits of convergent sequences in  $A$
  - $C(R)$  - the metric space of continuous functions on  $R$  to  $\mathbb{R}$
  - $C(S, X)$  - the metric space of continuous functions on  $S$  to  $X, S \rightarrow X$
  - $C^1(R)$  - the metric space of continuously differentiable functions on  $R$  to  $\mathbb{R}$
  - $C(R)^*$  - the space of functionals  $l_r$  on  $C(R)$  such that  $l_r(c) = c(r)$  for all  $c \in C(R), r \in R$ .
  - $L_p(R)$  - the space of functions on  $R$  to  $\mathbb{R}$  absolute integrable to the power  $p, p > 0$
  - $(T, \Sigma, \mu)$  - the positive finite measure space
  - $\mathcal{A}(T, \Sigma, \mu, X)$  - the set of all  $\mu$ -measurable functions on  $T$  to  $X$
  - $frm^+(T)$  - the set of all positive measure in  $T$
  - $B(T, \Sigma, \mu, S; X)$  [or  $B(T, S; X)$  or  $B$ ] - the vector space of functions  $\varphi: T \times S \rightarrow X$  such that, for all  $(t, s) \in T \times S, \varphi(t, \cdot) \in C(S, X), \varphi(\cdot, s)$  is  $\mu$ -measurable and there exists a  $\mu$ -integrable  $\psi_\varphi: T \rightarrow \mathbb{R}$  with  $|\varphi(t, \cdot)|_{\sup} \leq \psi_\varphi(t)$
- For simplicity, we denote sometimes  $\sum (i \in [a, b])$  and  $\int ds (s \in C)$  instead of  $\sum_{i=a}^b$  and  $\int_C ds$  respectively.

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