

DICTIONARY OF MICROBIOLOGY and MOLECULAR BIOLOGY

Second Edition

Paul Singleton
Diana Sainsbury

A Wiley-Interscience Publication

JOHN WILEY & SONS

Chichester · New York · Brisbane · Toronto · Singapore

Copyright © 1978, 1987 by John Wiley & Sons Ltd

Reprinted 1988, 1989, 1991

Reprinted with corrections, December 1994

Japanese edition 1997

Paperback edition 1993

Reprinted November 1993

Reprinted with corrections, September 1994

Reprinted March 1995

Reprinted February 1996

Reprinted with corrections, October 1996

Reprinted June 1997

All rights reserved.

No part of this book may be reproduced by any means, or transmitted, or translated into a machine language without the written permission of the publisher

Library of Congress Cataloging in Publication Data

Singleton, Paul.

Dictionary of microbiology and molecular biology.

Rev. ed. of: Dictionary of microbiology, c1978.

'A Wiley Interscience publication.'

I. Microbiology—Dictionaries. 2. Molecular biology—Dictionaries. I. Sainsbury, Diana.

II. Singleton, Paul. Dictionary of microbiology.

III. Title.

QR9.S56 1987 5769.03921 87-19047

British Library Cataloguing in Publication Data

Singleton, Paul. 1937–

Dictionary of microbiology and molecular biology.—2nd ed.

1. Microbiology—Dictionaries

2. Molecular biology—Dictionaries

I. Title II. Sainsbury, Diana.

III. Singleton, Paul. 1937–

5769.03921 QR9

ISBN 0 471 91114 3 (cloth)

ISBN 0 471 94052 6 (paper)

Printed and bound in Great Britain
by Redwood Books, Trowbridge, Wiltshire

alkyldimethylbenzylammonium chloride

are directly mutagenic: e.g. *O*⁶-alkylguanine can pair with thymine during subsequent DNA replication, resulting in G-C-to-A-T transitions, and alkylation of the O-4 position of thymine can cause A-T-to-G-C transitions. Most other lesions (e.g. *N*⁷-alkylguanine, *N*³-alkyladenine) are not directly mutagenic, but they may be lethal unless repaired by the cell (e.g. alkylation of the N-3 position of adenine blocks replication forks); various DNA REPAIR systems can recognize and repair alkylated bases (see e.g. ADAPTIVE RESPONSE).

The mutagenic effects of a given alkylating agent depend largely on the nature of the lesions it produces. For example, MNNG (q.v.), EMS (ethylmethane sulphonate) and MNU (*N*-methyl-*N*-nitrosourea: see *N*-NITROSO COMPOUNDS) produce relatively more directly mutagenic lesions (particularly *O*⁶-alkylguanine), while MMS (methylmethane sulphonate) produces higher proportions of e.g. *N*⁷-methylguanine and *N*³-methyladenine but relatively little *O*⁶-methylguanine. However, in organisms (such as *Escherichia coli*) which have an inducible error-prone repair system (see SOS SYSTEM), MMS can be mutagenic by causing lesions which induce this system; even in the case of directly mutagenic agents such as MNNG, a proportion of the mutations induced may be due to error-prone repair in *E. coli* [JB (1985) 163 213–220].

alkyldimethylbenzylammonium chloride See QUATERNARY AMMONIUM COMPOUNDS.

***N*-alkylnitrosoureas** See *N*-NITROSO COMPOUNDS.

all-glass impinger (bubbler) An instrument used e.g. for sampling the airborne microflora. (See also AIR.) Essentially, it consists of a vertical glass cylinder, containing a volume of liquid, and a longer, narrower glass tube fitted coaxially within the cylinder and partly submerged in the liquid; when suction is applied to the annular space, air is drawn in through the narrow tube and bubbles up through the liquid — during which process particles are transferred from the air to the liquid.

allantoid Sausage-shaped; elongated and slightly curved with rounded ends.

allele (allelomorph) Any of one or more alternative forms of a given GENE; both (or all) alleles of a given gene are concerned with the same trait or characteristic, but the product or function coded for by a particular allele differs, qualitatively and/or quantitatively, from that coded for by other alleles of that gene. Three or more alleles of a given gene constitute an *allelomorphic series*. In a diploid cell or organism the members of an allelic pair (i.e., the two alleles of a given gene) occupy corresponding positions (loci) on a pair of homologous chromosomes; if these alleles are

genetically identical the cell or organism is said to be *homozygous* — if genetically different, *heterozygous* — with respect to the particular gene. A *wild type allele* is one which codes for a particular phenotypic characteristic found in the WILD TYPE strain of a given organism. (See also DOMINANCE.)

allelomorph Syn. ALLELE.

allergen An antigen (or autocoupling HAPTEN — e.g., certain drugs) which can initiate a state of HYPERSENSITIVITY (commonly IMMEDIATE HYPERSENSITIVITY) or which can provoke a hypersensitivity reaction in individuals already sensitized with the allergen.

allergic alveolitis See EXTRINSIC ALLERGIC ALVEOLITIS.

allergy (1) A condition in which contact with a given allergen provokes a TYPE I REACTION. (See also PRAUSNITZ-KÜSTNER TEST.) (2) A condition in which contact with a given allergen gives rise to any manifestation of HYPERSENSITIVITY (see e.g. EXTRINSIC ALLERGIC ALVEOLITIS). (3) Formerly, the condition of a PRIMED individual.

allergy of infection An early name for DELAYED HYPERSENSITIVITY.

Allerton disease An African CATTLE DISEASE which involves a mild febrile condition followed by the appearance of skin nodules; it is caused by the bovine mammillitis virus and is apparently similar or identical to pseudolumphy skin disease.

Allescheria boydii See PSEUDALLESCHERIA.

alloantigen Antigen from a genetically different individual of the same species.

allochromasy Gradual, spontaneous chemical modification which occurs in the solutions of certain dyes — a single dye becoming a mixture of dyes. (See e.g. polychrome METHYLENE BLUE and NILE BLUE A.)

allochthonous Not indigenous to a given environment. (cf. AUTOCHTHONOUS sense 1.)

alogeneic Derived from a genetically different individual of the same species. (cf. SYNGENEIC; XENOGENEIC.)

Allogromia See FORAMINIFERIDA.

Allogromiina See FORAMINIFERIDA.

allolactose β-D-Galactopyranosyl-(1→6)-D-glucopyranose: a minor product of β-galactosidase action on LACTOSE; it is the natural inducer of the LAC OPERON in *Escherichia coli*.

Allomonas A genus of bacteria (family VIBRIONACEAE) which have been isolated from fresh water, sewage and faeces; GC%: ca. 57. Type species: *A. enterica* [JSB (1984) 34 150–154].

Allomyces A genus of fungi (order BLASTOCLADIALES) which occur in moist soils, muds, and water. The thallus is a branched, coenocytic mycelium which is attached to the substratum by branching rhizoids; in at least