

HENDERSON'S
Dictionary of
BIOLOGY

Fourteenth Edition

Edited by Eleanor Lawrence



HENDERSON'S DICTIONARY OF

Biology

Fourteenth Edition

Eleanor Lawrence



PEARSON

Benjamin
Cummings

Harlow, England • London • New York • Boston • San Francisco • Toronto
Sydney • Tokyo • Singapore • Hong Kong • Seoul • Taipei • New Delhi
Cape Town • Madrid • Mexico City • Amsterdam • Munich • Paris • Milan

Pearson Education Limited

Edinburgh Gate
Harlow
Essex CM20 2JE
England

and Associated Companies throughout the world

Visit us on the World Wide Web at:
www.pearsoned.co.uk

First published 1920
Eighth edition 1963
Ninth edition 1979
Tenth edition 1989
Eleventh edition 1995
Twelfth edition 2000
Thirteenth edition 2005
Fourteenth edition 2008

© Oliver and Boyd Limited 1963

© Pearson Education Limited 1979, 1989, 1995, 2000, 2005, 2008

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without either the prior written permission of the publisher or a licence permitting restricted copying in the United Kingdom issued by the Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS

We are grateful to the authors and Pearson Education for permission to reproduce Appendix 8: The Geological Timescale, from Lawrence, E., Jackson, R.W. and Jackson, J.M. (1998) *Longman Dictionary of Environmental Science*, Pearson Education: Harlow.

ISBN 978-0-321-50579-8

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Henderson's dictionary of biology / [edited by] Eleanor Lawrence.-- 14th ed.
p. cm.

ISBN-13: 978-0-321-50579-8

1. Biology--Dictionaries. I. Title: Dictionary of biology. II. Lawrence, Eleanor, 1949-
QH302.5.H45 2008
570.3--dc22

2007051175

10 9 8 7 6 5 4 3 2 1
12 11 10 09 08

Typeset in 8/9pt Times NR by 35

Printed and bound in Malaysia (CTP - PJB)

The publisher's policy is to use paper manufactured from sustainable forests.

chromatid conversion

metaphase of mitosis and meiosis as the two halves of a double structure held together at the centromere. A chromatid essentially becomes a separate new chromosome at anaphase of mitosis and in the 2nd meiotic division.

chromatid conversion *see* gene conversion.

chromatin *n.* the complex of DNA and histone proteins that makes up the basic material of eukaryotic chromosomes. It is composed of molecules of DNA associated with histones and packaged into nucleosomes. Although the term chromatin strictly refers to the complex of DNA and histone, it is often used to refer to the chromosomal material as a whole, which includes other proteins also. *see also* heterochromatin, euchromatin.

chromatin remodelling the alteration of the structure and functional state of chromatin by processes such as the repositioning of nucleosomes (nucleosome remodelling), histone modification and DNA methylation.

chromatin-remodelling complex *see* nucleosome-remodelling complex.

chromatocyte *n.* pigment-containing cell.

chromatography *n.* separation of compounds in a mixture on the basis of their affinity for, and migration with, a non-polar solvent such as water on a polar support such as paper or through a column of various materials. *see also* affinity chromatography, column chromatography, partition chromatography, gel-filtration chromatography.

chromatophil(ous) *chromophilous q.v.*

chromatophore *n.* (1) organelle containing pigment; (2) pigment cell or group of pigment cells which, under the control of the nervous system or of hormones, can be altered in shape or colour.

chromatotropism *n.* orientation in response to stimulus consisting of a particular colour.

Chromista *n.* a proposed kingdom containing the Hyphochytriomycota, Labyrinthulomycota, Oomycota (water moulds), Phaeophyta (brown algae), Chrysophyta (golden algae), Bacillariophyta (diatoms), Haptophyta (coccolithophorids) and Xanthophyta (yellow-green algae). A very similar grouping has also been given the name Stramenopila.

chromo-argentaffin *a.* staining with bichromates and silver nitrate, *appl.* flask-shaped cells in epithelium of crypts of Lieberkühn.

chromoblast *n.* embryonic cell giving rise to a pigment cell.

chromocentre *n.* (1) region at which polytene chromosomes appear to be attached together; (2) granule of heterochromatin, part of interphase chromosomes, many of which show up on staining interphase nuclei.

chromocyte *n.* pigment-containing cell.

chromogen *n.* substance that is converted into a pigment.

chromogenesis *n.* production of colour or pigment.

chromogenic *a.* colour-producing.

chromomere *n.* one of numerous bead-like structures along meiotic and mitotic chromosomes in prophase.

chromonema *n.* thread of chromatin (chromosome) as detected during interphase, when the chromosomes are extended and dispersed in the nucleus. *plu.*

chromonemata.

chromophane *n.* (1) pigmented oil globule (red, yellow or green) found in retina of birds, reptiles, fishes, marsupials; (2) any retinal pigments.

chromophilic, chromophilous *a.* staining readily.

chromophore *n.* the group of atoms in a molecule responsible for absorbing light energy and to whose presence colour in a compound is due.

chromoplast *n.* coloured plastid containing no chlorophyll but usually containing some red or yellow pigment.

chromoprotein *n.* protein that is combined with a pigment, such as haemoglobin, chlorocruorin, cytochromes.

chromosomal *a.* of or *pert.* a chromosome or chromosomes.

chromosomal incompatibility failure to interbreed due to differences in chromosome composition.

chromosomal mosaic an individual who has somatic cells of more than one type of chromosome constitution, usually arising from an error in mitosis during development.

chromosome *n.* (1) in eukaryotic cells, a structure composed of DNA and associated

progamete *n.* a structure giving rise to gametes by abstriction, in certain fungi.

progenesis *n.* the maturation of gametes before completion of body growth.

progenitor cells cells that give rise to other types of cell.

progeotropism *n.* positive geotropism.

progeric *a.* causing earlier onset of ageing and a reduced lifespan.

progestagens *n.plu.* a group of steroids that have effects like progesterone.

progestational *a.* (1) *appl.* phase of the oestrous cycle during luteal and endometrial activity; (2) *appl.* hormones controlling uterine cycle and preparing uterus for implantation of conceptus.

progesterone *n.* steroid hormone secreted by the female mammalian corpus luteum and placenta, which prepares the uterus to receive the fertilized egg, maintains the uterus during pregnancy, inhibits ovulation during pregnancy and is the precursor to several other hormones. It is a component of some types of contraceptive pill. *alt.* progestin, progestone. Formerly also known as luteal hormone or luteosterone.

progestin, progestone forms of progesterone *q.v.*

progestogen *n.* any compound with progesterone-like effects in a female mammal.

proglottid, proglottis *n.* individual segment of an adult tapeworm, containing a set of reproductive organs. Eggs are formed in the posterior proglottids, are shed in the faeces and then enter the alternative host where they hatch. *plu.* proglottids, proglottides.

prognathous *a.* (1) having prominent or projecting jaws; (2) with mouthparts projecting downwards, *appl.* insects.

progonal *a. appl.* sterile anterior portion of genital ridge.

progoneate *a.* having the genital aperture anteriorly, as in some arthropods.

programmed cell death cell death that occurs as a normal part of the development or physiology of an organism. Cells dying in this way undergo apoptosis and not necrosis.

progressive provisioning the feeding of a larva in repeated meals. *cf.* mass provisioning.

Prokarya, Prokaryota, prokaryotes

progress zone in the developing vertebrate limb, a population of actively dividing mesodermal cells immediately underneath the apical ectodermal ridge of the limb bud. This zone provides the cells of the limb.

Progymnophyta, progymnophytes, progymnosperms *n., n.plu., n.plu.* division of extinct spore-bearing woody plants and trees, with secondary xylem similar to that of gymnosperms, and which are believed to be possible ancestors of the gymnosperms.

prohaptor *n.* anterior adhesive organ in trematodes.

prohormone *n.* an inactive precursor of a hormone, esp. of a polypeptide or peptide hormone, many of which are produced by enzymatic cleavage of an active portion from a longer polypeptide prohormone.

prohydrotropism *n.* positive hydrotropism.

proinflammatory *a.* promoting inflammation, *appl.* e.g. histamine, leukotrienes, prostaglandins.

proiosis *n.* the premature development of spores.

projectile *a.* (1) protrusible; (2) *appl.* structures that can be thrust forwards.

projection *n.* the perception of external sensation as external despite the fact that the stimuli are interpreted in the brain.

projection neurons neurons in the brain that have their cell bodies in one region and their axon terminals in another. *cf.* local-circuit neurons.

projicient *a. appl.* sense organs reacting to distant stimuli such as light or sound.

Prokarya, Prokaryota, prokaryotes *n., n., n.plu.* the Bacteria and the Archaea collectively, unicellular microorganisms whose small simple cells lack a membrane-bounded nucleus, mitochondria, chloroplasts and other membrane-bounded organelles typical of plant, animal, fungal, protozoan or algal cells. Their DNA is usually in the form of a single circular molecule and is not complexed with histones. They are divided into two domains or superkingdoms, the Bacteria and the Archaea, on the basis of biochemical differences and DNA sequence data. *a. prokaryotic. cf.* eukaryotes. *see* Appendices 5 and 6.