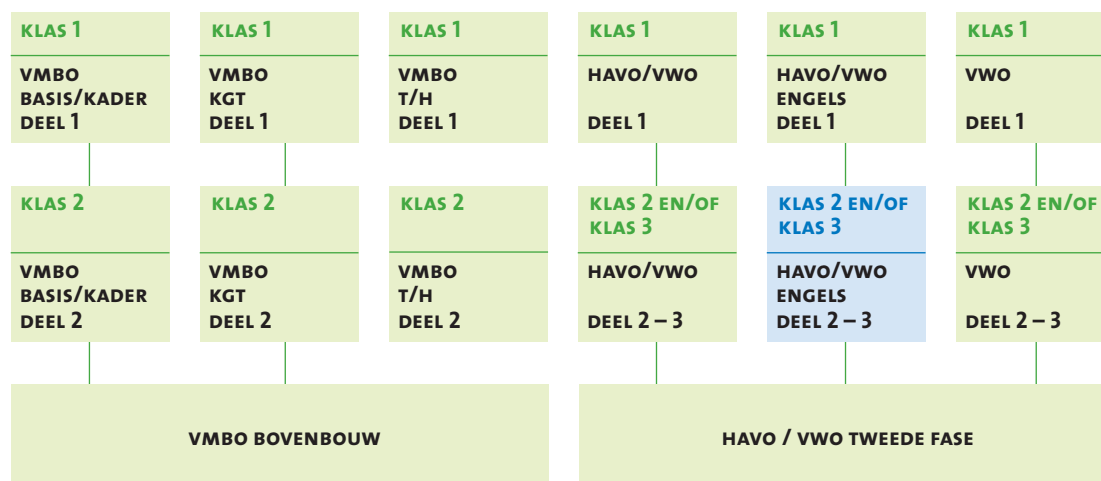


**Nectar  
5e editie  
biologie**

**havo / vwo English  
year 2-3  
textbook**

## Serie-overzicht



Vormgeving binnenwerk: Van Kelckhoven BNO, Groningen  
 Vormgeving omslag: Bloemvis Design en communicatie, Groningen  
 Fotografie omslag: Shutterstock  
 Technisch tekenwerk: Interlink Consultants, Oud-Beijerland  
 Vrije illustraties: Tringa Paintings, Veenendaal  
 Cartoons: Haasart Illustraties, Rhenen

o / 18

© 2018 Noordhoff Uitgevers bv, Groningen/Utrecht, The Netherlands

Behoudens de in of krachtens de Auteurswet van 1912 gestelde uitzonderingen mag niets uit deze uitgave worden verveelvoudigd, opgeslagen in een geautomatiseerd gegevensbestand of openbaar gemaakt, in enige vorm of op enige wijze, hetzij elektronisch, mechanisch, door fotokopieën, opnamen of enige andere manier, zonder voorafgaande schriftelijke toestemming van de uitgever. Voor zover het maken van reprografische verveelvoudigingen uit deze uitgave is toegestaan op grond van artikel 16h Auteurswet 1912 dient men de daarvoor verschuldigde vergoedingen te voldoen aan Stichting Reprorecht (Postbus 3060, 2130 KB Hoofddorp, [www.reprorecht.nl](http://www.reprorecht.nl)). Voor het overnemen van (een) gedeelte(n) uit deze uitgave in bloemlezingen, readers en andere compilatiewerken (artikel 16 Auteurswet 1912) kan men zich wenden tot Stichting PRO (Stichting Publicatie- en Reproductierechten Organisatie, Postbus 3060, 2130 KB Hoofddorp, [www.stichting-pro.nl](http://www.stichting-pro.nl)).

*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 prior written permission of the publisher.*

ISBN 978-90-01-88028-6

# Nectar 5e editie biologie

## havo / vwo English year 2-3 textbook

### Authors

Trijnie Akkerman  
Simone Harmsen  
Marjan den Hertog  
Lidie Hulst  
Elles Lalieu

### Translation

Lotte Oostebrink  
Marjolein Pieters-Van Zalen

### ICT

Christine Dirkse  
Cynthia van Gelderen  
Ida van Genderen  
Jolien Hemmen  
Remco Hendriks  
Jannie ter Horst-Kettelarij  
Rowan Schadenberg  
Ton Schijvens  
Anneke Veenstra

### Advice

Elles van der Waarde

### Editor

Marjolein Pieters-Van Zalen

## For the teacher

Nectar offers learning materials specifically designed for each level. For vmbo-b/k, there are two combined text-workbooks per school year, including Nectar online. For the other levels (kgt, t/h, h/v, vwo, and h/v English) the material consists of a textbook and two workbooks, also including Nectar online.

### The learning materials

Each chapter contains:

- **Introduction.** The learning aims per paragraph are stated in the introduction.
- **Paragraphs.** The paragraphs consist of text and figures. The important concepts are printed in bold and the definition is given in the same sentence. The figures form the main thread in a paragraph. This enables various learning styles. Some figures are full-page in order to emphasise difficult processes and biological concepts. A \* key question offers an extra challenge for the better student. Each paragraph ends with To remember, a short summary of the material.
- **In Context.** Each paragraph is followed by an In Context, in which the student uses the biological concepts as discussed in the paragraph in a new context.
- **In Connection.** In the In Connection paragraph, the student explicitly makes a connection between the subjects of the current chapter and previous chapters.
- **\*-paragraph.** Each chapter has a \*-paragraph with challenging subjects for the vwo-student.
- **In Depth.** Challenging materials at a higher level for the more proficient student.

In the workbook:

- **Start.** In this short assignment the students cooperate, refresh their knowledge, and are given an active introduction to the subject of the chapter.
- **Assignments.** There are three different types of assignments:
  - 🔄 supportive assignment; \*
  - challenging assignment; and
  - average assignments without a symbol.With the aid of these three types of assignments it is possible to differentiate into three available learning paths. A student can choose the following paths:
  - 1 this path contains the 🔄 and average assignments for those students that require extra support
  - 2 this path only contains the average assignments
  - 3 this path contains both the average and the \* assignments for more proficient students
- **Lab activities.** There are one or more lab activities at the end of (almost) every paragraph.
- **Summary.** Students make their own summary and make the connections between the different biological concepts.
- **Test yourself.** A diagnostic test covering the entire chapter, subdivided by paragraph.
- **In Depth.** The assignments covering the In Depth subject of the textbook.

### Nectar online

With this edition it is possible to work fully digitally. In addition, it is also possible to work blended, alternating between working with the book and digital materials.

The material of the chapters and the assignments are available via Nectar online. The assignments are interactive and fillable, with immediate feedback and correction. Depending on the results, the student works in learning path 1, 2, or 3 and it is possible to adjust upwards or downwards.

In addition, Nectar online consists of the following parts:

- **Prior knowledge assessment:** activate the required prior knowledge.
- **Animations:** elucidate complicated biological processes.
- **Practice test:** your students can assess their knowledge of the topics on test level.

### Teacher material

Beside Nectar online for your students, additional teacher material is available via the docentenpakket online, such as tests, solutions, guides, a presentation tool for your interactive whiteboard and dashboards to keep track of your students.

### Planning

The textbook contains 8 chapters. Counting 38 effective teaching weeks per school year, the material in each chapter should be studied in a little less than 5 weeks.



# Contents

- 7 Food 6**
  - 7.1 Eat healthy 8
  - 7.2 Energy 14
  - 7.3 Building and protecting 18
  - 7.4 Digesting food 24
  - 7.5 In connection – Eating in space 30
  - \* 7.6 Eating safely 32

**In depth Diets 36**
  
- 8 Your body works 38**
  - 8.1 It works 40
  - 8.2 You breathe 44
  - 8.3 Your blood transports 50
  - 8.4 Your blood circulation 54
  - 8.5 In connection – The physical examination 60
  - \* 8.6 Around your cells 62

**In depth Oedema 66**
  
- 9 Health 68**
  - 9.1 Unhealthy 70
  - 9.2 Well organized 75
  - 9.3 Your skin 82
  - 9.4 Illnesses 86
  - 9.5 In connection – To the hospital 92
  - \* 9.6 Blood transfusion 94

**In depth Influenza 98**
  
- 10 People change 100**
  - 10.1 Growing up 102
  - 10.2 Puberty 106
  - 10.3 Relationships 110
  - 10.4 Lovesickness 113
  - 10.5 In connection – Growing up with the Maasai 118
  - \* 10.6 The brain changes 120

**In depth AIDS 124**
  
- 11 Sexual reproduction 126**
  - 11.1 Males and females 128
  - 11.2 Fertilisation 134
  - 11.3 Pregnancy 139
  - 11.4 You look like... 146
  - 11.5 In connection – Breeding elephants 152
  - \* 11.6 Cells en chromosomes 154

**In depth Cloning 158**
  
- 12 Heredity and evolution 160**
  - 12.1 Passing on characteristics 162
  - 12.2 It runs in the family 167
  - 12.3 Changing of species 172
  - 12.4 Human evolution 180
  - 12.5 In connection – Super humans 186
  - \* 12.6 DNA modification 188

**In depth Evolution theory 192**
  
- 13 Animals and plants 194**
  - 13.1 Nutrition 196
  - 13.2 Respiration 203
  - 13.3 Transport 208
  - 13.4 Hot and cold 212
  - 13.5 In connection – Expedition to the tropics 218
  - \* 13.6 Deep sea 220

**In depth Energy balance 224**
  
- 14 A sustainable lifestyle 226**
  - 14.1 Your impact on the earth 228
  - 14.2 Producing food 232
  - 14.3 Pollution 237
  - 14.4 Choosing a sustainable lifestyle 243
  - 14.5 In connection – A paper bag of chips 248
  - \* 14.6 Global warming 250

**In depth Biodiversity 254**
  
- Checklists 256**
- Glossary 263**
- Index 288**