

Fonti delle illustrazioni di Sadava, Heller, Orians, Purves, Hillis, *Biologia.blu* – Dalle cellule agli organismi © Zanichelli 2011

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Capitolo A1 Dalle cellule agli organismi

Figura 1 Galyna Andrushko/shutterstock; *Figura 2A* Dr. Cecil H. Fox/Photo Researchers, Inc, *2B* da R. Hooke, 1664. *Microfotografia*, *2C* Astrid & Hanns-Frieder Michler/Photo Researchers, Inc., *2D* John Durham/SPL/Photo Researchers, Inc; *Figura 4A* Frantisek Czanner/shutterstock, *4B* Christopher Meder/shutterstock; *Figura 5 Organismo*: Sami Sarkis/Painet Inc, *Popolazione*: LogicStock/Painet Inc, *Comunità*: Georgie Holland/AGE Fotostock, *Biosfera*: NASA; *Figura 6A* © Frans Lanting/Minden Pictures, *6B* Marguerite Smits Van Oyen/Naturepl.com; *Figura 7* oneo/shutterstock; *Figura 8 Acero*: Simon Colmer & Abby Rex/Alamy, *Pino*: David McIntyre, *Ninfea*: Pete Oxford/Naturepl.com, *Cetriolo*: David McIntyre, *Pianta carnivora*: Nick Garbutt/Naturepl.com; *Figura 9A* Eye of Science/SPL/Photo Researchers, Inc., *1B* Dennis Kunkel Microscopy, Inc., *1C* Markus Geisen/NHMPL; *Figura 10A* Markus Geisen/NHMPL, *10B* Frans Lanting/Minden Pictures, *10C* Glen Threlfo/Auscape/Minden Pictures, *10D* Piotr Naskrecki/Minden Pictures, *10E* Tui De Roy/Minden Pictures; *Figura 11A* Peter Beck/CORBIS, *11B* PASQUALE SORRENTINO/SCIENCE PHOTO LIBRARY; *Figura 12* HUMANITIES AND SOCIAL SCIENCES LIBRARY/NEW YORK PUBLIC LIBRARY/SCIENCE PHOTO LIBRARY, *Figura 13A* Charles O'Rear/CORBIS; *Figura 14* Leo/shutterstock.

Capitolo A2 Dagli organismi alle cellule

Figura 3 Mitsuaki Iwago/Minden Pictures; *Figura 4* Jorg Hackemann/shutterstock; *Figura 6* Lazar Mihai-Bogdan/shutterstock; *Figura 7* Marie C Fields/shutterstock; *Figura 8* SCIENCE PHOTO LIBRARY/Contrasto; *Figura 9* Kellis/shutterstock; *Figura 11* Carlo Gardini; *Figura 16* Claudio Baldini/shutterstock; *Figura 17* Biophoto Associates/Photo Researchers, Inc, *centro*: Ken Wagner/Visuals Unlimited, *destra*: CNRI/SPL/Photo Researchers; *Figura 18* NATIONAL CANCER INSTITUTE/SCIENCE PHOTO LIBRARY; *Figura 22A* Pixelman/shutterstock; *22B* Paul Cowan/shutterstock; *Figura 25* Dusan Zidar/shutterstock; *Figura 29* Ragnarock/shutterstock; *Figura 30* Vishnevskiy Vasily /shutterstock; *Figura 30A* Brian Lasenby/shutterstock.

Capitolo A3 Osserviamo la cellula

Figura 4 in alto a sinistra: IST Cell Bank, Genoa, *in alto a destra*: Michael W. Davidson, Florida State U., *in basso a sinistra*: Dr. Gopal Murti/SPL/Photo Researchers, Inc; *Figura 5* J. J. Cardamone Jr. & B. K. Pugashetti/Biological Photo Service; *Figura 6* Dennis Kunkel Microscopy; *Figura 7* Mike Abbey/Visuals Unlimited Inc; *Figura 8 Mitocondrio*: K. Porter, D. Fawcett/Visuals Unlimited, *Citoscheletro*: Don Fawcett, John Heuser/Photo Researchers, Inc, *Nucleolo*: Richard Rodewald/Biological Photo Service, *Perossisoma*: E. H. Newcomb & S. E. Frederick/Biological Photo Service, *Parete cellulare*: Biophoto Associates/Photo Researchers, Inc, *Ribosoma*: da M. Boublik et al., 1990. *The Ribosome*, p. 177. American Society for Microbiology, *Centrioli*: Barry F. King/Biological Photo Service, *Plasmalemma*: J. David Robertson, Duke U. Medical Center, *RE ruvido*: Don Fawcett/Science Source/Photo Researchers, Inc, *RE liscio*: Don Fawcett, D. Friend/Science Source/Photo Researchers, Inc, *Cloroplasto*: W. P. Wergin, E. H. Newcomb/Biological Photo Service, *Apparato di Golgi*: L. Andrew Staehelin, U. Colorado; *Figura 9A* Dr. Ron Milligan, Scripps Research Institute; *Figura 10A* Barry King, U. California, Davis, Biological photo service; *10B* Biophoto

Associates/Science Source/Photo Researchers, Inc; *Figura 11* CNRI / SCIENCE PHOTO LIBRARY; *Figura 12* Don Fawcett/Visuals Unlimited; *Figura 13* Bowers/Photo Researchers, Inc; *Figura 14* Sanders/Biological Photo Service; *Scheda p. A70* CNRI/SCIENCE PHOTO LIBRARY; *Figura 15* K. Porter, D. Fawcett/Visuals Unlimited; *Figura 16* W. P. Wergin, E. H. Newcomb/Biological Photo Service, *riquadro*: W. P. Wergin/Biological Photo Service; C John Durham/SPL/Photo Researchers, Inc, *Figura 17* E. H. Newcomb & S. E. Frederick/Biological Photo Service; *Figura 18* M. C. Ledbetter, Brookhaven National Laboratory; *Figura 19* Vic Small, Austrian Academy of Sciences, Salzburg, Austria; *Figura 20* DR TORSTEN WITTMANN / SCIENCE PHOTO LIBRARY; *Figura 22A* STEVE GSCHMEISSNER / SCIENCE PHOTO LIBRARY, *22B* JUERGEN BERGER / SCIENCE PHOTO LIBRARY; *Figura 23* SPL/Photo Researchers, Inc, *23A-C* W. L. Dentler/Biological Photo Service; *Figura 24* Biophoto Associates/Photo Researchers, Inc; *Figura 25 a sinistra*: David Sadava, *a destra in alto*: da J. A. Buckwalter & L. Rosenberg, 1983. *Coll. Rel. Res.* 3: 489. L. Rosenberg, *a destra in basso*: J. Gross, Biozentrum/SPL/Photo Researchers, Inc; *Figura 26A* D. S. Friend, U. California, San Francisco, *26B* Darcy E. Kelly, U. Washington, *26C* C. Peracchia.

Capitolo A4 La cellula al lavoro

Figura 1A Jason Stitt/shutterstock; *1B* Greg Epperson/shutterstock; *Figura 2A-B* Maxim Petrichuk/shutterstock; *Figura 3A* 26kot/shutterstock *3B* psantik/shutterstock; *Figura 5* Dmitrijs Mihejevs/shutterstock; *Figura 6* Darwin Dale/Photo Researchers, Inc; *Figura 8* Mikael Damkier/shutterstock; *Figura 11* photobar/shutterstock; *Figura 13* da PDB 1A7K. H. Kim & W. G. Hol, 1998. *J Mol. Biol.* 278: 5; *Figura 18* L. Andrew Staehelin, U. Colorado; *Figura 28* da M. M. Perry, 1979. *J. Cell Sci.* 39: 26.

Capitolo A5 Il metabolismo energetico

Figura 1 Marek Mierzejewski/shutterstock; *Figura 6* Morgan Lane Photography/shutterstock; *Figura 8B* Marie C. Fields/shutterstock; *8C* Imageman/shutterstock; *Figura 9A* K.R. PORTER / SCIENCE PHOTO LIBRARY; *9B* CNRI / SCIENCE PHOTO LIBRARY; *Figura 11* Elena Elisseeva/shutterstock; *Figura 12* Ephraim Racker; *Figura 14* Andrew Syred/SPL/Photo Researchers, Inc; *Figura 17* Tish1/shutterstock.

Capitolo A6 La divisione cellulare e la riproduzione degli organismi

Figura 1 Steve Gschmeissner/SCIENCE PHOTO LIBRARY; *Figura 2A* David M. Phillips/Visuals Unlimited, *2B-C* John D. Cunningham/Visuals Unlimited; *Figura 3* John J. Cardamone Jr./Biological Photo Service; *Figura 5* Biophoto Associates /Photo Researchers; *Figura 6* G.F. Adrian T. Sumner/Getty Images, Inc.; *Figura 7* Nasser Rusan; *Figura 8B* Conly L. Rieder/Biological Photo Service; *Figura 9A* T.E. Schroeder/Biological Photo Service, *9B* B.A. Palevitz, E.H. Newcomb/Biological Photo Service; *Figura 10A* Dr. John Cunningham/Visuals Unlimited, *10B* Garry T. Cole/Biological Photo Service; *Figura 11 saiva_l/* shutterstock; *Figura 12 a sinistra*: Andrew Syred/SPL/Photo Researchers, Inc., *al centro*: David McIntyre, *a destra*: Gerry Ellis, DigitalVision/PictureQuest; *Figura 13* J. Kezer; *Figura 15* C.A. Hasenkampf/Biological Photo Service; *Figura 16* Dr. Thomas Ried & Dr. Evelin Schröck, NIH.

Capitolo A7 L'ereditarietà e l'evoluzione

Figura 1 The Mendelianum; *Figura 5* REGENTS OF UNIV. OF CALIFORNIA 2005 / DR ULI WEIER/SCIENCE PHOTO LIBRARY.

Capitolo A8 La storia e l'evoluzione degli esseri viventi

Figura 1 SCIENCE PHOTO LIBRARY; *Scheda p.A163 A* James Randklev/Corbis; *B* DR

JEREMY BURGESS/SCIENCE PHOTO LIBRARY; *Figura 2* GEORGE BERNARD/SCIENCE PHOTO LIBRARY; *Figura 4* da W. Levi, 1965. *Encyclopedia of Pigeon Breeds*. T.F.H. Publications, Jersey City, NJ. (A-B: R.L. Kienlen/Ralston Purina Company, C-D: Stauber); *Scheda p.A167* The Mendelianum; *Figura 6A* Wellford Tiller/shutterstock, *6B* Ralf Broskvar/shutterstock; *6C* Falk Kienas/shutterstock, *Figura 7* Ballista; *Figura 8* Willyam Bradberry/shutterstock; *Scheda p. A171* Rick Friedman/Corbis; *Figura 9* CHRISTIAN JEGOU PUBLIPHOTO DIFFUSION/SCIENCE PHOTO LIBRARY; *Figura 10* Chris Howes/Wild Places Photography/Alamy; *10B* The Natural History Museum, London; *Figura 11* François Gohier/The National Audubon Society Collection/Photo Researchers, Inc; *11B* DIRK WIERSMA/SCIENCE PHOTO LIBRARY; *Figura 13* DR KLAUS BOLLER/SCIENCE PHOTO LIBRARY; *Scheda A175* Courtesy of NASA; *Figura 14* Dennis Kunkel Microscopy, Inc; *Figura 15* PASIEKA/SCIENCE PHOTOLIBRARY; *Figura 16* SINCLAIR STAMMERS / SCIENCE PHOTO LIBRARY; *Figura 17* Eric Isselée/shutterstock.

Capitolo A9 La biodiversità: procarioti, protisti, piante, funghi

Figura 1 Kari Lounatmaa/Photo Researchers, Inc; *Figura 2A* James Randklev/Corbis, *2B* DIRK WIERSMA/SCIENCE PHOTO LIBRARY; *2C* Janice Carr/NCID/CDC; *Figura 3* DR KLAUS BOLLER/SCIENCE PHOTO LIBRARY; *Figura 4B* Hugh Spencer/Photo Researchers, Inc; *Scheda p.A186* A.B. DOWSETT/SCIENCE PHOTO LIBRARY; *Figura 5* *cianobatteri* Paul W. Johnson/Biological Photo Service; *spirocheta* David Cox/CDC; *clamidie* BIOMEDICAL IMAGING UNIT, SOUTHAMPTON GENERAL HOSPITAL / SCIENCE PHOTO LIBRARY; *firmicuti* Dr Kari Lounatmaa/Photo Researchers, Inc; *proteobatteri* Dennis Kunkel, Mycroscopy, Inc.; *attinobatteri* David Phillips/Visuals Unlimited; *Figura 6* Krafft/Hoa-qui/Photo Researchers, Inc; *Figura 7* LAGUNA DESIGN/SCIENCE PHOTO LIBRARY; *Figura 8* *ciliati* Mike Abbey/Visuals Unlimited; *radiolari* Andrew Syred/SPL/Photo Researchers, Inc; *foraminiferi* Astrid & Hanns-Frieder Michler/SPL/Photo Researchers, Inc; *radiolari 6A* David Patterson, Linda Amaral Zettler, Mike Peglar & Tom Nerad/microscope; *dinoflagellati* Dennis Kunkel Microscopy, Inc; *ameba* Mike Abbey/Visuals Unlimited; *diatomee sinistra* Steve Gschmeissner/Photo Researchers, Inc; *destra* Manfred Kage/Peter Arnold, Inc., *Figura 9* *oomiceti* James W. Richardson/Visuals Unlimited; *funghi mucilluginosi plasmodiali* Larry Jon Friesen *funghi mucilluginosi cellulari* R. Blanton & M. Grimson; *alghe brune* Duncan McEwan/Naturepl.com; *clorofite* Carolina Biological/Visuals Unlimited *alghe rosse* Milton Rand/Tom Stack & Assoc *clorofite* Larry Jon Friesen *Figura 10* filipe B. Varela/ shutterstock *Figura 11* Brian Enting/Photo Researchers *Figura 12* *in basso a sinistra* Sergey Toronto/shutterstock *a destra* J. Robert Waaland/Biological Photo Service; *Figura 13A* J. Paulin/Visuals Unlimited; *13B* Randy Moore/Visuals Unlimited; *13C* J. Robert Waaland/Biological Photo Service; *Figura 14* David McIntyre; *Figura 15* U. *in alto a sinistra* Michigan Exhibit Museum; *in alto a destra* Ed Reschke/Peter Arnold; *in bassso a sinistra* David Sieren/Visuals Unlimited; *a metà* Rod Planck/Dembinsky Photo Assoc., *in basso a destra* Nuridsany et Perennou/Photo Researchers, Inc; *Figura 17A* Natural Visions/Alamy, *17B* RMF/Visuals Unlimited; *Figura 19A* *sinistra*: David McIntyre, *destra*: Stan W. Elems/Visuals Unlimited, *19B* *sinistra*: David McIntyre, *destra*: Dr. John D. Cunningham/Visuals Unlimited; *Figura 21* *in alto a sinistra* Patricio Robles Gil/Naturepl.com, *21 in alto a destra* Dave Watts/Naturepl.com, *21 al centro a sinistra* Antonio Abrignani *21 al centro a destra* M. Graybill/J. Hodder/Biological Photo Service, *21 in basso a sinistra* M. Graybill/J. Hodder/Biological Photo Service *in basso a destra* Frans Lanting/Minden Pictures; *Figura 24A* Plantography/Alamym, *24B* Thomas Photography LLC/Alamy; *Figura 25A* Inga Spence/Tom Stack & Assoc., *25B* blickwinkel/Alamy; *Figura*

26 *in alto a sinistra* Andrew E. Kalnik/Photo Researchers, Inc., 26 *in alto a destra* Ed Reschke/Peter Arnold, Inc., *al centro a sinistra* Alan & Linda Detrick/The National Audubon Society Collection/Photo Researchers, Inc; *al centro a destra* Adam Jones/Dembinsky Photo Assoc; *in basso a sinistra* Willard Clay/photolibrary.com, 26B Alan & Linda Detrick/The National Audubon Society Collection/Photo Researchers, Inc; *in basso a destra* Dobresum/shutterstock; *scheda A204A* David M. Phillips/Visuals Unlimited B Thomas Eisner, Cornell U. C David McIntyre. D David McIntyre; *Figura 29 in alto a sinistra MANCA in alto a destra* Richard Shiell/Dembinsky Photo Assoc., *al centro a sinistra* David M. Phillips/Visuals Unlimited; *al centro a destra* Matt Meadows/Peter Arnold, Inc; *in basso a sinistra* Manfred Danegger/Photo Researchers, Inc., *in basso a destra* Botanica/photolibrary.com; *Figura 30A* Amy Wynn/Naturepl.com, 30B Geoff Simpson/Naturepl.com, 30C Gary Meszaros/Dembinsky Photo Assoc.

Capitolo A10 La biodiversità: gli animali

Figura 1A William Bourland/microscope; *1B* David Patterson & Aimlee Laderman /microscope; *Figura 3A* J. B. Morrill, *3B* da G. N. Cherr et al., 1992; *Figura 5A* Jurgen Freund/Naturepl.com, *5B* Henry W. Robison/Visuals Unlimited; *Figura 6* NREY/shutterstock; *Figura 7 a pg. A216 Poriferi* David Wrobel/Visuals Unlimited; *Cnidari* Larry Jon Friesen, *Platelminti* Ed Robinson/photolibrary.com; *Nematodi* JAMES KING-HOLMES/SCIENCE PHOTO LIBRARY; *Molluschi a sinistra e a destra* Larry Jon Friesen; *Figura 7 a pg. A217 crostacei* Frans Lanting/Minden Pictures *insetti* Larry Jon Friesen, *miriapodi* John Mitchell/Jupiter Images *cheliccerati* Frans Lanting/Minden Pictures; *echinodermi a sinistra* Randy Morse/Tom Stack & Assoc., e *a destra* Peter Scoones/Photo Researchers, Inc., *figura 8B* Jurgen Freund/Naturepl.com, *8C* David Wrobel/Visuals Unlimited; *figura 9* Robert Brons/Biological Photo Service; *figura 11 condroitti a destra* Dave Fleetham/Tom Stack & Assoc., *condroitti a sinistra* Kelvin Aitken/AGE Fotostock, *actinopterigi a sinistra* Tobias Bernhard/Oxford Scientific Films/photolibrary.com, *a destra* Larry Jon Friesen, *al centro* Dave Fleetham/Visuals Unlimited; *sarcopterigi* Tom McHugh, Steinhart Aquarium/The National Audubon Society Collection/Photo Researchers, Inc; *figura 12 mancano girini e adulto A* mitzy/shutterstock; *figura 14* Carrie's camera/shutterstock; *figura 15* Dave B. Fleetham/Tom Stack & Assoc., *15B* Dave Watts/Alamy, *15C* C. Alan Morgan/Peter Arnold, Inc., *15D* Larry Jon Friesen, *15E* Frans Lanting/Minden Pictures; *figura 16 da* X. Xu et al., 2003. *Nature* 421: 335; *pappagallo* Volodymyr Krasnyuk/shutterstock; *piume* mmm/shutterstock; *scheletro* Mares/shutterstock; *figura 17A* Roger Wilmhurst/Foto Natura/Minden Pictures, *17B* Andrew D. Sinauer, *17C* Tom Vezo/Minden Pictures, *17D* Skip Moody/Dembinsky Photo Assoc., *17E* Gerry Ellis, DigitalVision/PictureQuest; *figura 18* fnsy/shutterstock *figura 19 in alto a sinistra* Ed Kanze/Dembinsky Photo Assoc., *in alto a destra* Dave Watts/Tom Stack & Assoc; *al centro a sinistra* Jany Sauvanet/Photo Researchers, Inc; *al centro a destra* JTB Photo Communications/photolibrary.com *in basso a sinistra* Claude Steelman/OSF/Jupiter Images, *in basso a destra* Tim Jackson/OSF/Jupiter Images.

VERSO LE COMPETENZE

Scheda Vulcano bianco carletti76/Panoramio

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VERSO IL CLIL - CONTENT AND LANGUAGE INTEGRATED LEARNING

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