CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

Index

Index: references to figures are in **bold**; to tables in *italics*

aboriginal Australians 88–89
The Accidental Homo sapiens (DeSalle and Tattersall) 119–120
Adams, Joseph 46
adaptations 43–44, 132–134
  and allele frequencies 148
  athletic prowess/body shape 131–132
  high altitudes 125–128
  lactose persistence 128–131
  skin color 122–125
  variations in humans 121–122
ADMIXTURE (computer program) 102
Afer humans 25
Africa/African 86–87
  athletic prowess 131
  autosomes analysis 87–88
  haplotypes 73
  human origins 67, 76–77
  immigrants, Britain 20
Agassiz, Louis 31–32
AIMs *see* ancestry informative markers
alkaptonuria 47
Allan, James McGrigor 33
allele frequencies **69**, 85, 135–136, 148
Allen's rule 132
allozyme analysis 48–50
altitude, human adaptations 125–128
Am I Not a Man and a Brother? (Wedgwood medallion) **37**
American Association of Physical Anthropologists (AAPA) 39–40
American Civil War 34
American people 28–29
  autosomes analysis 89
  haplotypes 73
  Native Americans xvii
Americanus humans 25
ancestry informative markers (AIMs) 73, 86, 143
  bias 94
  pie diagrams **98**
ancestry 145–148, 154
ancestry-targeted panels 82
ancient Egypt 17–18
ancient Greece 18
ancient Rome 18–19
Ancient World 17–19
Andes, high 126–127
animal breeding 2–3
anthropology, physical 42–43
anti-Semitism 32

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

"The apportionment of human diversity" (paper by Lewontin) 50
array approaches, DNA sequencing 81
Aryan race 32, 37–38
ascertainment **84–85**
  bias 85, 86, 94–95, 101–102, 106, 142–144
  process 82–86
Asia, autosomes analysis 87–88
Asiaticus humans 25
athletic prowess 131–132
Australia, autosomes analysis 88–89
Australopithecus 12
autosomes 81
  analysis for Africa 86–87
  analysis for Americas 89
  analysis for Asia 87–88
  analysis for Australia and the Pacific 88–89
  analysis for Europe 90
  human diversity 86–90
  Neanderthals and Denisovans 91–92

Bartolomé de las Casas 21
behaviors
  biological basis 115–116
  genetic basis 119–120
Bernier, François 22–24
between groups/within groups 133, 144
bias, ascertainment 85, 86, 94–95, 101–102, 106, 142–144
BiDil (drug) 114–115
biochemical genetic markers 49
biodiversity 6, 41
biological basis, social behavior 115–116
biological criteria, race xvii–xviii
Black Codes 34
blood groups 48, 144
  genetic variation 48–50, 67
Blumenbach, Johannes Friedrich 28–29, 31
Boas, Franz 39–40
body shape 131–132
Brace, Loring 44
branching diagrams *see* phylogenetic trees
Brandt, Guido 77–81
Buffon, Georges Leclerc, Comte de 26–27, 33

candidate-gene method, complex behavior studies 116–117
Cann, Rebecca 56
Cann–Wilson tree 56, 58–59, 65
Caucasian people 28–29, 39
Cavalli-Sforza, Luigi Luca 60, 68, **69**, 97
  The History and Geography of Human Genes 49–50
  principal component analysis (PCA) 104
cave paintings 15
chance *see* random chance
Christianity 20–21
chromosomes, discovery 48
cluster analysis/clustering methods 106, 110
  genomics 85, 97–**99**
  identity by descent 107–109
  misunderstandings 135–136, 142, 144–146
  principal component analysis (PCA) 106
CNTNAP2 gene 119
Cohen, David 60
Colbert, Stephen 143–144
colonization, European 21
Committee on the Negro 39–40
common ancestors 1, 36, 41, 56–59, 95–97, **96**; *see also* monogeny
communication failures xviii–xix

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

complexity, genomic data 95
congenital disorders 46
control region (CR), mtDNA 55
Coon, Carleton 43–44
correlation structure 144–146
Count, Earl W. 28
COVID-19 pandemic 113, 135
Crania Americana (Morton) 30
creationism 1–2
cultural evolution 121
Cuvier, Georges 27–28

dairy products 128–131
dark skin 123
Darwin, Charles 1–2, 6, 32, 33, 36
  concept of race 141–142
  The Descent of Man 148–149
  human variations 153
  natural selection 121–122
  population thinking 8–9
  social Darwinism 38–39
  The Variation of Animals and Plants under Domestication 46
data reduction 104, 145
Database of Single Nucleotide Polymorphisms (dbSNP) 61
Dausset, Jean 60
definition of race 139–140
demographic patterns, ancient Europeans **84–85**
dendrograms 51
Denisovans 7, 90–92
  EPAS1 gene 125–126
  language genomics 119
descent and relatedness 94–95, 107; *see also* Identity by Descent
Descent of Man (Darwin) 36, 149–150
descent with modification 1
direct-to-consumer (DTC) genetic ancestry 61, 107, 146–148
discreteness objection, race 137
diseases/disorders
  BiDil drug treatment 114–115
  COVID-19 pandemic 113, 135
  dispositional disorders 46
  environmental factors 112–115
  ethnicity effects 113
  genetic basis 111–113
  inherited 45, 46, 47
  metabolic disorders 47
disease-targeted panels 82
dispersal, humans 67, 77; *see also* migrations
DNA sequencing 70, 81–86; *see also* mitochondrial DNA
  genome-wide association studies (GWAS) 111–112, 113, 116–117, 120
  next-generation sequencing 73–74, 75
  paleogenomics 74, **80**
  probabilities 52–53
  restriction fragment length polymorphism (RFLP) 54, 56, 69–70
  sequence differences 51
Dobzhansky, Theodosius 42–43, 44, 141
Drosophila 3
DST gene 127
dysgenics 38–39

East Asian haplotypes 73
educational attainment 117–119
Edwards, A. W. F. 50, 144, 145
Egypt, ancient 17–18
EIGENSTRAT (computer program) 106
Enlightenment thought 21–24
environmental factors 67, 118
  adaptations 132–134
  diseases/disorders 112–115
  evolution 4–5, 11–12, 27, 41
  fossil record 4
  high altitudes 125–128

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

intelligence/educational achievement 117–119
natural selection 2–3
phenotypes 3–4
racial science 120
skin color 122–125
EPAS1 gene 125–126
epicanthic skin folds 122
Essay on the Inequality of Human Races (de Gobineau) 32
Ethiopian people 28–29, 127–128
eugenics 41, 66, 118
Francis Galton 38–39, 46
Europaeus humans 25
Europeans, and Their Descendants in North America (Allan) 33
Europe/European
bias, genome-wide association studies 112
exploration 19
haplotypes 73, 77–81, **79**, **80**
Europe/Europeans
autosomes analysis 90
evolutionary psychology 116, 133–134
evolutionary theory xviii, 33, 42–43, 54
genetic basis 50
how evolution works 1–6
human evolution 10–16
Neanderthals and Denisovans 90–91
paleogenomics 74–75
sociobiology 115–116
species and subspecies 6–10, 139–140
extinct hominins, human diversity 90–92
eyelid skin folds 122

Facing Reality: Two Truths about Race in America (Murray) 136, 138, 148
families and subfamilies 6
fast-twitch muscle fibers 131
Ferus (wild) humans 25
fineSTRUCTURE (computer program) 102
Fisher, R. A 3, 48–50
fossil record 4, 35–36
early hominins 11
human 10
subspecies 10–11
Francois, Olivier 103–104
Fuerst, John 136

Galton, Francis 38–39, 46
Garn, Stanley 42–43
Garrod, Archibold Edward 47
genera 6
The Genetic Basis of Evolutionary Change (Lewontin) 50
genetics and genomics 2–4, 45–46, 67–69, 81–86; *see also* DNA sequencing; population genetics
ascertainment 94–95
clustering 97, **99**
complexity of data 95
genomic shortcuts 81–86
identity by descent 107–109
individualized 115
methods 93, 109–110
misunderstandings 153–154
principal component analysis (PCA) 103–106, *105*
racial science and racism 65–66, 136
science and pseudoscience 154
skin color 123–125
stabilization 5
structuring 100–103
treeing 95–97
Genetics and the Origin of Species (Dobzhansky) 141
Genome Aggregation Database (gnomAD) 60, 61–63, **64**

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE
Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

genome-wide association studies (GWAS) 111–112, 113, 116–117, 120
geographic representation, genomes **64**, **69**
geography of humankind, misunderstandings 152
germ plasm 46–47
Ghanaians in London, 1554 19–20
Glasgow, Joshua 137
GLI3 gene 119
Gliddon, George 31
global population studies 102
Gobineau, Arthur de 32
Goldstein, David 112
Gower, J. C. 144
Grant, Madison 39, 41
Grant, Robert 32
Great Chain of Being 22, 24, 29, 31
Great Rift Valley 11
Greece, ancient 18
GWAS *see* genome-wide association studies

Haddon, Alfred 41
Haeckel, Ernst 37–38
Haldane, J. B. S. 48–50
Han, Eunjung 107
haplotypes/haplogroups 59–60
  accumulation with time **74**
  ancient mtDNA and Y chromosomal genomes 76
  geographical areas 70–74, **71**, **72**
  M, N, R, U haplogroups 77
Harden, Kathryn Paige 118
Harris, Harry 49
Hatemi, Peter 116–117
heredity, principles of 2–3
Herodotus 18
hierarchy of everything 22
hierarchy of life 24
Hirschfeld, Ludwig and Hanka 48
The History and Geography of Human Genes (Cavalli-Sforza) 49–50, 68–69, 97
Hitler, Adolf 39–40
hominins 11–15
  family tree **13**
  hairless 122
Homo erectus 14, 40, 43–44
Homo ergaster 12–14
Homo heidelbergensis 14
Homo neanderthalensis 7, 9, 15, 35–36, 90–92, 119
Homo sapiens 6, 7–8, 24
  cognition 15
  cultural evolution 121
  early Africans 122
  interbreeding with *Homo neanderthalensis* 7
  lack of subspecies 10
  polycentric diversification 40
  population movements 11
  single species 41–43, 150
  youngness of species 152
Hooton, Earnest 39–40
human constructs xviii
human diversity *see* variations in humans
Human Diversity: The Biology of Gender, Race, and Class (Murray) 136
human evolution 10–16, 27, 41
Human Genetic Diversity Project (HGDP) 60, **62**
Human Genome Project 111–112
Human Genome Structural Variation Consortium (HGSV) 64
human variation panels 60–64, 82
  bias 94–95
  treeing 95–97
Hume, David 22
Hunt, James 33
hunter-gatherers, Africa 86–87
Huxley, Julian 41

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

Huxley, Thomas Henry 2, 35–36
Hyperborean people 28
hypervariable regions (HVRs), mtDNA 55
hypothesis testing 65, 139–140

identity by descent (IBD) 107–109, 110
importance objection 137
Indiana Jones fallacy 148–149
individualism 38–39
individualized genomics 115
information handling 14
intelligence and race 116–119, 133–134
  educational attainment 117–119
interbreeding 6
  global 108–109, 151
  with *Homo neanderthalensis* 92
International Society of Genetic Genealogy (ISOGG) 59–60
Inuit people 132

Jain, Anil K. 106, 110
Jim Crow laws 34
Jorde, Lynne 144

Kahn, Jonathan 113–114
Kames, Lord 22
Kant, Immanuel 27
Keel, Terrence 141–142
Keith, Sir Arthur 41
Klaatsch, Hermann 33
Ku Klux Klan 34
Kuhn, Thomas 148–149

lactose persistence 128–131, **129**
Lamarck, J. B. Chevalier de 27–28, 33
Landsteiner, Karl 48
language, genomics 119
LCT gene 129–130
Lectures on Man (Vogt) 33
Lewontin, Richard 50, 120, 133, 137, 144
Ling, Huaying 113
Linnaeus, Carl 24–25
Linnean system 24–25
Living Races of Man (Coon) 43–44
Livingstone, Frank 43
localized population studies 102

Maasai people 132
MacArthur, Daniel 61–63
Malayan people 28–29
Mankind Evolving (Dobzhansky) 42–43
Man's Most Dangerous Myth: The Fallacy of Race (Montagu) 41–42
marketing purposes, racial stratification 114–115
Marks, Jon 25
maternal inheritance 55
medical perspectives 111–115, 147–148
melanin production 124
Mendel, Gregor 2–3, 45
Mendel's laws of inheritance 47
Menozzi, Paolo 49–50, 68–69
metabolic disorders 47
methods, racial science 93, 109–110
migrations 67–69, 76, **84**–**85**, 147; *see also* dispersal
  Africa to Asia **87**
  Asia to Western Hemisphere **88**, 90
  French Canada to United Sates 108–109
  paleogenomics 92
  Siberia to Americas 89
mistakes in racial science 135–136, 138–139
  adaptations and allele frequencies 148
  ancestry 146–148
  ascertainment bias 142–144
  cluster analysis 142
  correlation structure 144–146

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

mistakes in racial science (cont.)
hypothesis testing 139–140
taxonomy 140–142
misunderstandings in racial science xviii–xix, 137–139
ancestry 154
genetic basis for race 153–154
geography, humankind 152
human races 151
orthodox vs. unorthodox science 148–149
physical differences 153
racial/ethnic groups, abilities 151–152
skin color 152
mitochondrial DNA (mtDNA) 55–59, 70, 73
Neanderthals and Denisovans 90–91
paleogenomics 75–76
mitochondrial Eve 56–59
MITOMAP 59–60
Modern Evolutionary Synthesis 3–4, 10, 42–44
Mongolian people 28–29
Monist league 37–38
monogeny; *see also* common ancestors
Alfred Russel Wallace 36
Christianity 21
United States 34
monophyly 95–97, **96**, 109
Montagu, Ashley 41–42
"more within than between" dictum 50
Morgan, Thomas Hunt 3
Morton, Samuel 30–31
Mount Everest paradox 143–144
mtDNA *see* mitochondrial DNA
multiregion evolution 44
Murray, Charles 116, 136, 138, 148
mutations 3–5, 55

Native Americans xvii
natural selection 2–3
The Nature of Race (Fuerst) 136
Nazi atrocities 38–40, 41
Neanderthals 7, 9, 15, 35–36, 90–92
language genomics 119
Need, Anna 112
negro race 39–40
The Negro's Place in Nature (Hunt) 33
Nei, Masatoshi 67–68
New Physical Anthropology 42–43
New World 21
next-generation sequencing (NGS) 75
noble savage 21–22
Nordic (Teutonic) people 39
Nott, Josiah 31
Nouvelle Division de la Terre (Bernier) 22–24, **23**
Novembre,John 103, 110, 142
Nuremberg Laws 39–40

objectively real objection 137–138
On the Natural Varieties of Humankind (Blumenbach) 28–29
On the Non-Existence of Human Races (Livingstone) 43
1000 Genomes Project 61, **62**, 70
geographic grouping **71**
map **62**
pie diagram **98**
Origin of Races (Coon) 43–44
Origin of Species (Darwin) 1, 33
orthodox vs. unorthodox science 148–149
oxygen requirements, humans 125–128

Pääbo, Svante 75, 86–87
Pacific, autosomes analysis 88–89
pale skin 123
paleoanthropology 10
paleoenvironmental data 4
paleogenomics 74, **84–85**
Africa 86–87

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

Americas 89
Asia 87–88
Europe 90
migrations and interbreeding 92
Neanderthals and Denisovans 90–91
South Pacific 88–89
Papuans 88–89
Paracelsus 20
paraphyly 95, **96**
parsimony, phylogenetic trees 53–54
The Passing of the Great Race (Grant) 39
PCA *see* principal component analysis (PCA)
Peruvian Altiplano 126–127
Peter, Benjamin 103, 110, 142
Peyrère, Isaac de la 20
phenotypes 2–4, 47, 145
gene–environment interactions 113, 118–119
lactose persistence 130
racialized views 115
phenotypic traits 45–46, 111–120
humans vs. other primates 25
phylogenetic systematics 145–146
phylogenetic trees 50–51, 75, 95–97, **96**, 109, 142
African origins, humans 76–77, **78**
mtDNA **57**
parsimony 53–54
rooting and polarity 56, **58**
similarity 51–52
statistical likelihood **52**, 53
terminology **53**
physical differences, misunderstandings 153
physical similarity, species 8
Piazza, Alberto 49–50, 68–69
pie diagrams, clustering 97–100, **98**, **99**, 109
police departments, United States 35
political views, genetic influence 116–117
polycentric diversification 40
polygeny 21, 22, 30–32
United States 34
polyphyly 95, **96**
polytypic species 42–43
Pope Paul III 21
Popper, Karl 65, 143
population-based biobanks 60–64
population genetics 48–50, 68–69, 73, 102, 144
common ancestors 56–59
identity by descent 107–109
localized 102
primary base sequences 54
principal component analysis (PCA) 103–104
STRUCTURE 100–103
populations
definition 141
differences 43
vs. race 141
thinking 8–9
Posth, Cosimo 77
post-World War II developments 41–44
primary base sequences 54
Primates, order 24
principal component analysis (PCA) 51–52, 103–106, *105*, 145–146
human variation 68
overinterpretation 110, 154
pseudoscience 135, 149–150

quantitative genetics 46
quantitative trait loci (QTL) 120

race after Darwin
Huxley, Wallace, and Darwin 35, **37**
late nineteenth and early twentieth century 37–41

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE

Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

race after Darwin (cont.)
  postwar developments 41–44
  separate origins 33–35
race-based medicine 111–115
race before evolutionary theory
  the Ancient World 17–19
  early nineteenth century 29–32
  early zoology 24–29
  Enlightenment thought 21–24
  medieval and post-medieval Europe 19–21
Race: Debunking a Scientific Myth (DeSalle and Tattersall) 51–52, 112
Race Unmasked (Yudell) 141
race/racial science 39, 41; *see also* mistakes; misunderstandings
  allozyme analysis 48–50
  blood groups 48
  educational attainment 117–119
  Galton and eugenics 46–47
  Garrod and errors of metabolism 47–48
  genetics in 1960s and 1970s 50–54
  human genome sequencing 54–60
  human variation panels 60–64
  methods 93, 109–110
  objections 137–138
  vs. racial nonscience (racism) 65–66
races/varieties 30–31
racial inequality 37–38
racial realism 137–138
racial stratification 114–115, 135
racial/ethnic groups, abilities 151–152
racism xvii, 32, 65–66
random chance
  in evolution 4–5, 122
  human diversity 133, 153
  in survival 5
ranking, human varieties 31
Ray, John 6
reference panels *82*
Reich, David 106
restriction fragment length polymorphism (RFLP) 54, 56
Roberts, Dorothy 114–115
Rockman, Matt 120
Rome, ancient 18–19
rooting, phylogenetic trees 56, **58**
Rosenberg, Noah 101–102
Rousseau, Jean-Jacques 21–22
Roychoudhury, Arun K. 67–68
running ability 131–132

sample size problems 101–102
science and pseudoscience
  misunderstandings 149
  racial science in context 135
  racism 149–150
scientific knowledge 65
Severus, Lucius Septimus 18–19
sexual selection 36
Siberia to Americas migration 89
similarity, phylogenetic trees 95
single nucleotide polymorphisms (SNPs) 61
  DNA sequencing 81, 82, 83–86
  genome-wide association studies (GWAS) 111–112
  Y chromosomal DNA 70
single-species hypothesis 40, 41–42, 44
skin color 122–125
slavery xvii
  ancient Egypt 17–18
  ancient Rome 18–19
  Great Britain 32
  United States 30–31, 33–35
  West Africa to New World 19–20
SLC24A5 gene 123–125
slow-twitch muscle fibers 131
smallpox resistance 127
SNPs *see* single nucleotide polymorphisms

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE
Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

social Darwinism 38–39
social groups 17
sociobiology 116, 133–134
Sociobiology: The New Synthesis (Wilson) 115–116
sociocultural factors, disease 113
species 6–10
Spencer, Quayshawn 137–138
stabilization of genes 5
standardized collections, genes 60
statistical likelihood, phylogenetic trees **52**, 53
sterilization, forcible 38–39
stone tools 12–14
STRUCTURE (computer program) 100–103, 109–110, 145–146, 154
The Structure of Scientific Revolution (Kuhn) 148–149
structuring, genomics 100–103
subjective perceptions xviii
subspecies 8–9, 139–140
  vs. race 141
symbolic reasoning 15–16, 121
Systema Naturae (Linnaeus) 24
systematics 145–146

Tam, Vivian 113
taxonomy 6, 140–142, 153–154
tera-sampling 102–103
Teutonic people 39
Tibetan Plateau 125–126
Tills, Donald 67
Tishkoff, Sarah 103
Trail of Tears xvii
traits *see* phenotypic traits
treeing *see* phylogenetic trees
trinomen, subspecies 9
Troublesome Inheritance (Wade) 115, 135–136, 148
Troublesome Science (DeSalle and Tattersall) 118, 150
Two Americas (Murray) 116
two-layer model, migrations to Asia 87–88
Types of Mankind (Nott & Gliddon) 31

Understanding Evolution (Kampourakis) 1
Understanding Human Evolution (Tattersall) 1
United States
  database of single nucleotide polymorphisms 61
  identity by descent **108**
  racial issues xvii
  slavery 30–31, 33–35
unity, humankind 29
unorthodox vs. orthodox science 148–149
UV light, vitamin D 123

variations in humans xviii, 50, 67, 132–134, 144; *see also* human variation panels
  autosomes 86–90
  early molecular studies 67–69
  extinct hominins 90–92
  genomic shortcuts 81–86
  within groups/between groups 133
  mtDNA and Y chromosome 69, **74**
  paleogenomics 74, **80**
The Variation of Animals and Plants Under Domestication (Darwin) 46
varieties/races 30–31
visibility objection 137
visualizations, deceptive 103
vitamin D 123
Vogt, Carl 33

© in this web service Cambridge University Press & Assessment www.cambridge.org

CAMBRIDGE
Cambridge University Press & Assessment
978-1-316-51137-4 — Understanding Race
Rob DeSalle , Ian Tattersall
Index
More Information

Wade, Nicholas 101–102, 115, 135–136, 138, 148
Wallace, Alfred Russel 1, 36
Washburn, Sherwood 42–43
WDPCP gene 119
We Europeans: A Survey of "Racial" Problems (Huxley & Haddon) 41
Weidenreich, Franz 40, 44
Weiner, J. S. 42–43
Weismann, August 3–4, 46–47
Weiss, Kenneth 120
white swan approach, flawed 143
Wilson, Alan 56, 60
Wilson, E. O. 115–116
within groups/between groups 133, 144
Wolpoff, Milford 44
Wright, Sewall 48–50

Y chromosomal DNA 59–60, 73
  Neanderthals and Denisovans 90–91
  paleogenomics 75–76
Yudell, Michael 141

zoology, eighteenth century 24–29

© in this web service Cambridge University Press & Assessment www.cambridge.org