

INDEX

- Abū Ghāzī, 'Imād, 127, 134
- Achtman, Mark, et al., 35n8, 37n12, 44n23, 208n30. *See also* Cui, Yujun, et al.; Morelli, G., et al.
- aDNA, 10–11, 14, 17, 27–29, 35, 40n18, 44, 51–52, 82, 88, 117, 160, 193n1, 199, 210n17, 243–244, 264–66, 270, 275, 299. *See also* DNA
- Afghanistan, 266
- Africa, 11n4, 18, 35–48, 54, 161, 215, 265–66; Central, xiii, xiv, xvi, 31, 36, 41–44, 50, 200; East, 37–38, 41–50, 200; North, 9–11, 14, 18, 31, 41–43, 46, 64, 97, 196, 210, 300n24; sub-Saharan, xi, xiii, 12, 36n10, 38–41, 44–46, 49–51; Southeast, 215; South, 40n18, 43n21, 181; West, 44. *See also* Ebola virus; Ebola epidemic, West African
- Afroeurasia, 10, 26, 34, 54, 61, 194–98, 216, 227
- AIDS/HIV. *See* HIV/AIDS
- Akrokrowa, 43, 53
- Aksum, xiv
- Aleppo, 202–03, 206, 212, 214
- Alexandria, 125, 129, 133, 148, 202, 206
- Algeria, 34, 43n21, 265–67
- Allouche, Adel, 127
- Alps, European, xv, 18, 157–83
- Altmann, D. M., et al., 30, 51
- Amadeus VI, 173–74
- America, Central, 54n, 38, 260; North, 4, 11n4, 18, 48, 54, 161, 268, 298; South, x, 11n4, 18, 30, 48, 54, 161, 260, 268
- Anandavalli, Lakshmikanthan, 46, 49–50, 197n7
- Anatolia, 171, 198n10, 208–12, 227, 300n24
- ancient DNA. *See* aDNA
- Angkor Kingdom, 4, 150
- Angola. *See* *Yersinia pestis*, “Angola” strain
- animals, 10–12, 15, 31–34, 46, 52–53, 81, 101, 111, 115, 157, 180–81, 209–15, 232n1, 241n15, 246, 250, 267–71, 274, 292n12; consumed for food, 12, 178, 266, 301n25; pelts of, 47, 164, 178–79, 210, 301n25. *See also* furs; zoonotics
- anthrax, 98, 264
- anthropology, 16, 83–91, 97–117, 123, 251; biological, 16–23
- antibiotic resistance, 259–62, 265
- antibodies, xiii, 235.
See also immune response
- anti-Jewish violence, 16–17, 53, 63–91
- antiquity, xi, xiv–xv, 1, 40–43, 47–50, 99, 150–51, 165, 264, 267, 270, 320n1; late, 47, 174, 273
- Aosta, 165, 173
- Apennines, 177
- Appleby, Andrew, 232n2, 238
- Arabian Peninsula, 199, 209
- Arabian Sea, 48
- Aragón, 65, 68; Crown of 16, 63, 71, 91
- archeology, 16, 46, 63–64, 73–91, 276.
See also bioarcheology
- archives, 51, 69–71, 82, 127–28, 169, 172. *See also* documentary evidence; plague, narratives of
- Armelagos, George, 170
- armies, 49, 144, 165, 286–96, 299–302.
See also sieges; war(s)
- art history, 309–14
- arthropod vector, xiii, xiv, 9–14, 32, 40, 238. *See also* fleas; vector(s); ticks
- Ashtor, Eliyahu, 126
- Asia, x, 18, 36, 37, 48, 50, 285, 298; Central, 13n7, 18, 46–49, 196, 265–67, 285–87, 291, 299, 308; East, 3, 10, 20, 150, 196, 203, 287, 299, 308; South, 45, 50, 150, 181, 196, 201, 299; Southeast, 54
- Asia, West. *See* Middle East
- Assyr, 209

- Aswan, 129
 Australia, 11n4, 31n3, 53, 161, 259
 Avignon, 68n16, 171–72, 176
- Bacharach, Jere, 126
 bacteria. *See* anthrax; cholera;
 Yersinia pestis
 badgers, 33, 181
 Baḥr Abī al-Manajjā, 146
 Bangladesh, 262
 Barbarikon/Minnagar, 47
 Barcelona, 16, 65–75
 Barois, Julien, 137n5, 139, 145n21,
 146n23
 Barrett, Ronald, 260, 270
 bats, xiii, xiv, xv
 Bavaria, 38–40, 170, 264
 Bellinzona, 163–66
 Benedictow, Ole, 10n3, 159, 197n7,
 232n2, 239, 287n3, 300n24
 bharals, 33
 Bilbeis (Bilbays), 125, 133
 bioarcheology, 16–17, 26, 44, 51,
 96–100, 105–06, 109n6, 114–17,
 123, 150, 193–95, 199, 251, 271,
 314n6; Gompertz-Makeham
 model of, 112; Siler model of,
 111–12; Usher model of, 113–14.
 See also archeology
 biological anthropology, 9–23.
 See also anthropology;
 bioarcheology
 biological weapons, 28, 261, 264–65,
 269, 283
 biology, 61, 100, 103, 150, 195,
 199–200, 234, 242n16, 247, 275
 biosecurity, 264, 283
 Biraben, Jean-Noël, 172, 197n8, 205
 birds, 213–16
 Black Death, ix–xi, xiv–xvi, 5, 9–23,
 26, 29–30, 39–46, 51–54, 61–65,
 69, 82n33, 91, 96–110, 113–17,
 123–29, 156, 159–62, 171–78, 182,
 193, 193–97, 227, 231, 239, 244,
 248, 257–61, 271–73, 276, 283–88,
 296, 299–302, 308–11, 314, 326;
 mortality of, 97–107, 111–16,
 159–61, 172–73, 229–31; origins
 of, 13, 36, 129, 285–304; spread
 of, 160, 172–76. *See also* plague;
 pandemics; Second Plague
 Pandemic; *Yersinia pestis*
 Black Sea, 14n8, 46, 161, 171, 195
 Boccaccio, Giovanni, xv, 229
 Bohemia, 175
 Bombay, 32n15, 182, 201
 bones, 17, 48, 63–91, 97–117, 231,
 271, 299
 Boniface VIII, 315
 Borsch, Stuart, 16–18, 147
 Bos, Kirsten, et al., 10, 28, 30, 98, 160,
 193n1, 311
 Bosphorus, 215
 botulinum toxin, 264
 Brayer, A., 202
 Bresse, 173
 Britain, 175, 181. *See also* England
 British Commission for the Investi-
 gation of Plague in India, 182
 British Empire, 263
 British Isles, 165
 British Library, 310–15
 buboes, xii, 41n20, 50, 166, 230–31,
 268, 294, 304, 312. *See also* plague,
 bubonic; *Yersinia pestis*
 Buell, Paul D., 46, 197n7, 287–88, 296,
 299, 301n25
 buffalo, 210
 Bugati, Gasparo, 162, 167n9
 Bugey, 173
 al-Buhayra, 129, 147–49
 Burgundy, 165
 burial practices, xii, 16, 53, 64, 73–75,
 80–96, 105. *See also* cemeteries
 Busbecq, Ogier Ghiselin de, 214
- Caffa. *See* Kaffa
 Cairo, 47, 125–35, 146–50, 206
 Calcutta, 201, 261
 California, 181, 298n20
 call, 66, 70–71, 85–86.
 See also Jews, communities of
 Cambodia, 150
 camels, 14, 33–34, 210, 213, 266–67, 289
 Cameroon, xii
 Campbell, Bruce, xv, 13n8, 161,
 174n15, 183, 233–34, 271
 canids, 33. *See also* dogs
 canon law, 21, 309–23
 Canton Ticino, 164n7, 167–69
 Cao Shuji, 287–88, 293–98, 301–03, 308
 carbon dating, 45, 80, 276
 Carmichael, Ann G., xi, xv, 17–22, 115,
 212n35, 249, 273

- carnivores, 14, 33, 214–16, 267.
See also foxes; etc.
- Carrier, Nicholas, 178
- Caspian Sea, 208
- Catalonia, 16, 63–91
- cats, 268
- cattle, 33, 209, 271
- CDC. *See* United States of America
Centers for Disease Control and
Prevention
- Çelebi, Evliya, 212
- cemeteries, 10, 16, 21–22, 39, 43, 51,
63–91, 97–117, 125–50, 193n1,
248, 264, 271, 276, 311, 314
- Cervera, 16, 65–72
- Chambéry, 173
- Champagne, 165
- chemical weapons, 265
- chemokines, 243
- Chengdu, 292
- Chen Yizhong, 293
- Chiavenna, 167
- Chile, 181
- chimpanzees, xii n5, xv
- China, xi, xvi, 4, 12, 20–21, 31, 37–40,
46–48, 54, 150, 200–01, 262, 265,
268–69, 273–74, 285–303, 308
- cholera, x, xvi, 9, 197n8, 203n21, 260,
293n13
- Chouin, Gérard L., x n3, 43–44
- Christianity, 4, 16, 63, 66–67, 81–82,
86, 96, 105, 205, 312;
and Jewish minorities, 66, 81, 96
- Ciconia ciconia*. *See* storks
(*Ciconia ciconia*)
- Cinggis Qan, 285–86, 289
- Clement VI, 68, 171
- climate, xiv, xv, xvii, 13n8, 29–30, 34,
50, 161, 172–74, 177, 181–83, 195,
205–08, 233–34, 245, 263, 271
- clothing, 16, 32, 72, 80, 86, 220, 301.
See also furs; textiles
- Clysma, 47
- Cohn, Samuel K., 65n5, 193n2, 232n2,
239, 244–46, 288n6
- Colet, Anna, et al., 16, 53, 117, 172
- colonization, 8, 30
- Columbus, Christopher, 1, 8
- communal graves, 16, 53, 64, 73–74,
80–96. *See also* cemeteries
- Congo, 40–41. *See also* Democratic
Republic of Congo
- Conrad of Megenberg, 171
- Constantine I, 312
- Constantinople, 202–03.
See also Istanbul
- cows. *See* cattle
- Crane, Johanna T., 54, 200n17
- Crécy, battle of, 182
- Creighton, Charles, 197n8, 203
- Crespo, Fabian, 19–20, 99, 176n17
- Cui, Yujun, et al., 13, 33–41, 200n15,
285–88, 298–300, 308
- Cyprus, 250
- cytokine, 234–37, 240–43, 250
- Daliang, 289, 290
- Damascus, 206
- Damietta, 214
- Dante Alighieri, xvi
- De Amicis, Edmondo, 213
- DeCorse, Christopher R., 43–44
- deer, 33
- Delhi, 4, 261
- Democratic Republic of Congo, xii, xiii,
40–41, 260, 265–67
- dengue fever, 34n7, 272
- Denmark, 11, 97, 109–11
- depopulation, 17, 115, 125–41, 144,
147, 150, 156
- Dernschwam, Hans, 212–214
- DeWitte, Sharon N., 16–17, 20, 51n33,
101, 160, 193n1, 231, 248, 271
- diagnosis, 15, 21, 36n11, 49, 51–52,
61, 170, 198n10, 261, 267–69,
295, 309, 312–14, 320.
See also plague, *emic* approach
to; plague, *etic* approach to;
retrospective diagnosis,
problem of
- differential mortality, 231–33, 238,
250, 257
- Diocletian, 230
- disability, history of, 326
- disease(s), 9– 21, 27–34, 46–54, 61, 69,
82, 85, 88, 97–106, 113–17, 123,
128, 150, 157–59, 166, 175, 191,
194–216, 227, 231–39, 244–51,
259–67, 293–304, 309–16, 320–22,
326; vector-borne, 157–63.
See also vector(s)
- DNA, 27, 82, 99, 158, 262, 313.
See also aDNA
- doctors. *See* physicians

- documentary evidence, 9–11, 14–18,
31–36, 43–53, 63–72, 81–82, 89–94,
101–05, 109, 115–16, 127–50,
162–63, 170–74, 178–79, 195–96,
210–14, 266, 273–76, 285–308
- dogs, 213, 268
- Dols, Michael, 16n9, 44n23, 49n29, 97,
126–30, 134, 196–98, 287
- Domodossola, 164–66
- Dongping, 289, 290
- donkeys, 210
- Dorsetshire, 104
- drama, 168. *See also* plague, imagery of
- Dwight, H. G. O., 213
- East Smithfield, 10, 21, 51n33, 97,
104–17, 123, 150, 160, 248, 271,
276. *See also* cemeteries
- Ebola virus, ix–x, xii–xiv, 260; Ebola epi-
demic, 2014 West African, ix–xvii
- Echenberg, Myron, 43n21, 201n18, 263
- Eckert, Edward, 169–71
- ecology, 17–20, 26, 160–61, 166, 171,
177–78, 181–83, 209, 216, 238,
250–51, 276. *See also* climate;
ecosystems; human ecology
- economy, 44n23, 125–28, 141, 147,
150, 156, 287. *See also* plague,
economic results of
- ecosystems, 5, 14, 29n1.
See also climate; ecology
- ectoparasites, 207, 210, 266, 270.
See also fleas; lice; ticks
- Ecuador, 267, 269
- Edirne, 215
- Egypt, 17, 40–41, 47–49, 125–50, 156,
182, 198n9, 202, 208, 211, 214–15,
273–74
- Ell, Stephen, 159, 239, 240n14
- emerging diseases, xv, 99–100.
See also re-emerging infectious
diseases
- empires, 3–4, 8, 14, 19, 30, 127–30,
137–38, 147–49, 165, 171, 195–98,
201–07, 208–10, 214, 227, 263,
271–73, 286–303, 308
- England, 1, 12–14, 82, 101–05, 107,
111, 176, 199, 203, 241–42, 271,
311–14
- entomology, 12, 52
- Environmental History Network for
the Middle Ages, 273, 276
- epidemics, 16–21, 27, 30–31,
49–50, 54fn38, 64–67, 81, 88,
97–107, 110–11, 114–17, 123,
127n1, 132, 159–62, 167–78,
182–83, 191, 195–207, 212,
215, 231–33, 239–44, 249–50,
260–61, 265–76, 283–304, 312n3.
See also disease(s); Ebola virus;
pandemics
- epidemiology, x–xvi, 11, 20, 99–100,
115–17, 193, 211, 229–51,
270–76, 283
- Escherichia coli*, 262
- Essex, 101
- Ethiopia, xv
- Eurasia, xi, xiv n7, xv, 11, 19–21, 29,
39–42, 97, 157, 161, 179–82,
214, 234, 285, 295, 298–99, 308;
Central, 14, 50; Western, 13, 31, 46,
97, 177, 180. *See also* Middle East
- Eurocentrism, 2–5, 13, 19, 117, 150,
194–97, 200, 216
- Europe, 3–4, 9, 12n5, 18, 31, 44n22,
49, 82, 97, 101, 104–07, 116–17,
128, 149–50, 156–64, 169, 172–81,
195–206, 215–16, 234, 244–45,
288, 294, 298–300, 312–13, 326;
Alpine, 157–83, 191; Central, 12,
170–71, 275, 287; Eastern, 116,
198, 199n11, 275, 287; Southern,
198; Western, 2, 9, 13–19, 30, 39,
61, 64, 67, 116, 158–62, 171, 179,
198–99, 202–03, 299
- Faido, 166
- famine, 65, 69, 127–29, 178, 239,
245–50, 217. *See also* food;
malnutrition
- Fengxiang, 289–290
- First Plague Pandemic, xiv, 9–11, 14n8,
29–31, 35–41, 47, 61, 97, 197,
263. *See also* pandemics; plague;
Yersinia pestis
- fleas, 12, 29n1, 32–34, 38–39, 46, 52,
135, 157–62, 174–82, 191, 206,
209–11, 215, 231, 235, 238, 242,
251, 263n3, 266–74, 287, 292n12,
297–302; *Oropysylla montana*, 274;
Pulex irritans, 159, 162, 266, 268
- Florence, 101, 176
- foci (plague foci), xi–xv, 11n4, 18–19, 53,
161n4, 166, 171–73, 177, 180, 194,

- 207–09, 261, 265–69, 298–300;
enzootic, 13, 31–34, 173, 208, 215,
259, 265, 273, 283; permanent,
11n4, 180–81, 208; rural, 19.
See also plague; *Yersinia pestis*
- food, 33, 65, 98, 115, 162, 178, 211, 267,
271, 292n12, 297, 300–04, 322.
See also famine; nutrition
- foxes, 33, 214
- France, 65n6, 171–72, 176, 180, 199,
230, 266. *See also* Gaul
- Frieden, Thomas, xvi, 262–63
- Fuji, 300
- furs, xiv, xv, 6, 46–47, 164, 178–79,
301n25. *See also* animals,
pelts of; clothing
- Fuzhou, 300
- Galipapa, Hayim ben Abraham, 65–69,
72, 85
- Ganges River, 50
- Ganpu, 299–300
- Gansu, 46, 286–87, 293–94, 298–302, 308
- Gaul, 165, 176
- Gelting, M. H., 173
- Geltner, G., 273
- genetics, 1–12, 20–21, 27, 30–31,
35–43, 46–54, 193, 199, 270–72,
285, 288, 314n6
- Geneva, 165, 169, 173
- Genghis Khan. *See* Cinggis Qan
- Genoa, 165
- genome(s), 10, 20–21, 28, 30, 33–42,
52, 98–99, 160, 193n1, 264,
269–71, 311. *See also* aDNA; DNA;
genetics
- genomics, 40, 195. *See also* genetics
- Geoffrey of Meaux, 229, 238
- Georgia, 39, 41n19
- gerbils, 12, 33, 39, 157, 180, 298.
See also rodents
- germ theory, xvi, 20, 201, 270
- Germany, 105, 199, 315
- Ghana, xvi, 43, 44
- al-Gharbiya, 129, 133
- ghetto. *See* call
- Girona, 65, 74
- Giza, 129
- Glénisson, Jean, 176
- global history of health, ix–xvii, 15,
27–54, 259–76. *See also* globaliza-
tion; health; pandemics
- global studies, 2–5, 8
- globalization, ix–xvii, 2–5, 27–54, 61,
259–93
- goats, 33, 213
- Gotthard Pass, 165–66
- grain, xiv, 12, 16, 46, 127, 134,
174–76, 211, 247, 263, 268,
272–73, 287, 302
- Great Bovine Pestilence, 248, 271
- Great Famine, 234, 248, 271
- Great St. Bernard Pass, 165
- Green, Monica H., 5, 196n6, 212n35,
276, 288, 300n24, 303
- Guangdong, 293, 296
- Guinea, x–xi, xiii n6
- guinea pigs, 12, 267, 268.
See also rodents
- Guy de Chauliac, 171, 229–30
- gypsies. *See* Roma people
- Ha-Kohen, Joseph, 65, 68, 72
- Haiti, xvi
- Halesowen, 105
- hamsters, 212. *See also* rodents
- Hangzhou, 299
- Harbeck, M., et al., 11n4, 37–38, 40n18
- hares, 33, 177
- Haute-Maurienne, 168–69, 173, 230
- hazard analysis/models, 109–16
- health, 15–17, 51–53, 61, 98–100,
103, 107, 113–16, 159–63,
166–69, 182, 195–97, 200–01,
204, 231–34, 237, 248, 251,
257–65, 269, 275, 283, 295, 320.
See also global history of health
- hedgehogs, 182
- Heiligen, Louis. *See* Kempen,
Ludwig van
- Heiligen-Geist Hospital, 105
- helminths, 249–50
- Hennequin, Giles, 127
- Hereford, 105
- heterogeneous transmission, 269,
272–73
- Hezhou, 292
- hides, 210. *See* animals, pelts of;
clothing; furs
- Himachal district, 269
- Himalayas, 36, 209
- HIV/AIDS, x, xi, xii, xvii, 8, 19, 54, 99
- Holy Roman Emperor, 162, 230
- Hong Kong, 197–98, 201

- Horrox, Rosemary, 171
 horses, 174, 210, 213, 289, 292,
 302n27
 Huai River, 291
 Huesca, 65
 human ecology, 250, 276.
 See also ecology
 Hundred Years' War, 173, 182
 hyenas, 214, 227
 Hymes, Robert, xi, xv, 12n6, 13, 20–21,
 31n3, 39n16, 46

 Iberian Peninsula, 81, 172
 Ibn Ḥajar al-ʿAsqalānī, Aḥmad ibn ʿAlī ,
 130, 130fn3, 145fn21, 146
 Ibn Iyās, 130n3, 133, 137, 139, 142n11,
 144–47
 Ibn Khaldun, Abū Zayd, ix
 Ibn Khātima, Abū Jaʿfar Aḥmad, 231
 Ibn Mammātī, Al-Asʿad, 143–45
 Ibn Taghrībirdī, Yūsuf, 127n1, 130, 133,
 142n11, 147n24
 Ice Age, 137n5. *See also* Little Ice Age
 Igarashi, Daisuke, 128
 Ilgin, 212
 immune competence (IC), 99, 112,
 232–40, 245–51
 immune response, 32, 99, 232–51, 257
 immune system, 19, 106, 113, 231–38,
 247–50
 immunity, 9n1, 19, 30, 176n17, 232–40,
 246, 29n12
 immunological profile, 237–41, 245
 immunology, 229–51, 257, 271
 imperialism. *See* colonization; empires;
 postcolonial studies
 India, 2, 31–33, 36, 39, 46–51, 54, 61,
 159, 181–82, 200–01, 204, 209,
 244–45, 260, 261–62, 269, 298,
 302n27. *See also* Asia, South
 Indian Ocean, xv, 12, 31, 38, 43, 44–49,
 61, 135, 288, 299, 300
 Indies, 1
 Indus Valley, 47–50
 influenza, 8, 197n8
 insectivores, 182
 Iran, 149, 200, 208, 265
 Iraq, 150, 200, 208–09
 irrigation systems, 17, 127, 131,
 135–50, 156
 Islam, 16n9, 131, 137–39, 144, 261.
 See also Muslims

 Islamicate world, 14, 19, 61, 125, 129,
 204, 314. *See also* empires
 Israel, 72
 Istanbul, 177n18, 199n11,
 202–03, 206–08, 213n36, 215.
 See also Constantinople
 Italy, xv–xvi, 27, 63, 162–73, 199, 241
 Ivrea, 165

 Jahangir (Nur-ud-din Mohammad
 Salim), 49
 Jáuregui, Clara, 16
 Jean de Venette, 102
 Jenne-Jeno, 43, 53
 jerboas, 41n19, 211n34, 212
 Jews, 16, 47, 63–91, 96, 215, 314;
 archives of, 69; as religious
 minorities, 63–91, 96, 117;
 burial customs of, 74–75, 80–84,
 91; cemeteries for, 16, 63–64, 74,
 81–83, 96; citizenship of, 68–69,
 88–90; communities of, 16, 53,
 63–71, 80–83, 87, 90–91, 117,
 172; property of, 70;
 sources for, 69, 81;
 violence against, 26, 63–91, 96
 Jiaying, 299
 Jin Dynasty, 287–91, 295–96, 302–03,
 208
 jirds, 34, 39, 212
 Johannes Monachus, 315, 323
 Jordan, 266
 Jordan, William Chester, 234, 247–48
 Jura Mountains, 165, 179. *See also* Alps,
 European
 Justinianic Plague. *See* First Plague
 Pandemic
 Kaffa, 13, 299
 Kaifeng, 289–97
 Karachi, 201
 Kashmir, 45
 Kazakhstan, 179, 264
 Kempen, Ludwig van (Louis Heiligen),
 171, 174, 176
 Kenya, 40–41, 44
 Khafi Khan, Muhammad Hashim, 49
 Kilwa, 45
 Konya, 212
 Korean War, 108, 265
 Kurdistan, 39
 Kyrgyzstan, 266

- lagomorphs, 33, 162, 177
 Lake Maggiore, 164
 Lamu Archipelago, 44
 Lanslevillard, 168, 230
 Lausanne, 173
 Lawrence Livermore National Laboratory, 264
 Lawrenz, Matthew B., 19–20, 99, 176n17
 lemmings, 211–12
 leprosy, 64, 32n35, 245n20, 250, 310–14, 320–21, 326
 Le Roy Ladurie, Emmanuel, 11, 46
 letters, 47, 68, 162–67, 176, 179, 213.
 See also archives; documentary evidence
 Levant, 273
 Levant Company, 202
 Leventina Valley, 163n6, 165–66
 Liberia, ix, x, xiii, xvi
 Libya, 14, 39–41, 199, 208, 265–67
 lice, 32–33, 231, 266, 275
 Li Gao, 289–91, 294–96
 Li Jianshi, 301
 Lincoln (England), 101
 Little Ice Age, xv, 181
 Little, Lester K., 10n2, 13n7, 30, 193n2, 197, 288n6
 Liu Fu, 293
 Li Yushang, 287n4, 303
 Li Zhen, 291–92
 Locarno, 164–66
 Lombardy, 162–64, 167, 174–75
 London, 10, 14, 17, 21–22, 29–43, 51, 97, 104–06, 111, 116, 123, 139n8, 150, 160–61, 182, 193n1, 198, 202–03, 246–48, 271, 276, 309–11, 314–15, 326; Black Death cemeteries in, 10, 21–22, 39, 43, 51, 106, 114, 311; Great Plague of, 198. *See also* East Smithfield
 Louiseau, Julien, 288
 Low Countries, 165, 199.
 See also Netherlands
 Lübeck, 105
 Luofu, 293
 Lyon, 14, 39–41, 199, 208, 265–67

 Mackenzie, Mordach, 202, 203
 Maclean, Charles, 203, 213
 macrophages, 235–236
 Madagascar, xvi, 31n3, 39–40, 48, 182, 200, 209, 260–62, 267–69, 273
 al-Mahallat al-Kubra, 132–34
 Malabar Coast, 48
 malaria, xi, xvi, 34n7, 113, 249, 275, 292n13
 Mali, 43
 Mallorca, 66
 malnutrition, 100, 106–07, 114, 247–50, 271. *See also* famine; food; nutrition
 Mamluk sultanate, 127–30, 137–38, 147–49
 Manchuria, 179, 180, 269
 Mandeville, John, 1, 8
 al-Maqrīzī, Aḥmad Ibn 'Alī, 125, 129–30, 133, 138–46
 marmots, xv, 12, 18, 39, 42, 157, 174n16, 177–81, 191, 211–14, 286, 294, 297–302
 Marseille, 14, 171, 198, 202
 Martigny, 165, 173
 Massif Central, 172, 176
 McCleery, Iona, 50n32, 53
 McCormick, Michael, et al., 174n15, 183
 McIntosh, Roderick James, 43
 McKern-Stewart Korean War Reference Sample, 108
 McNeill, William H., xi n2, 36, 198n10, 232n2, 287–88, 298n21, 308
 measles, 8, 53
 Mecca, 43
 Médecins Sans Frontières (Doctors Without Borders), xi
 Mediterranean, xiv–xv, 9n1, 12–14, 18–20, 30–31, 39–47, 61, 128, 165, 171–72, 177n18, 180–81, 202–05, 215, 227, 246, 267, 273, 287, 299
 medieval, meanings of, xvi–xvii, 2–5, 8, 285–86; world, 1–8, 27–54, 169n9, 309. *See also* modern categories; modernity; periodization
The Medieval Globe, xvii, 1–8, 10, 22–23, 27–29, 117, 251, 270, 309
 medievalism, 8
 Medieval Medicine listserv (MEDMED-L), 275
 Meloy, John, 127
 Mengel, David, 36n11, 160
 merchants, 11, 16, 24, 47–48, 161, 165, 202, 215, 299. *See also* trade
 Mesopotamia, 199, 210
 methodologies, 5, 15, 22, 26–29, 32, 51–54, 83–90, 97–117, 125, 130–32, 196n5, 269, 272–75, 290, 309

- mice, 48, 177, 211–12, 236, 241n15.
See also rodents
- Microbial Detection Array, 264
- microbiology, 10–12, 19, 26, 29, 52n35, 193, 272
- Middle Ages. *See* medieval, meanings of; modernity; periodization
- Middle East, 9, 13n17, 19, 31, 34, 44n23, 126–28, 149–50, 196–98, 205, 263–65, 287, 299–300.
See also Eurasia; Africa, North
- Middle East Respiratory Syndrome (MERS), 263
- migration, 63, 110, 180, 205, 215–16, 244, 272, 275; of birds, 215–16.
See also nomads
- Mikhail, Alan, 128, 196n6
- Milan, 18, 162–72, 175–77, 191, 242
- Ming Dynasty, 286–88, 296–97, 303–04
- Minūf al-'Ulya, 132–35
- modern categories (applied to the pre-modern past), 2–4, 10–15, 18–22, 27–29, 35–37, 51–52, 173, 195–98, 201–05, 240, 260–63, 273, 286, 292–93, 311–12.
See also medieval, meanings of; modernity; periodization; retrospective diagnosis, problem of; plague, *emic* approach to; plague, *etic* approach to
- modernity, 3, 8. *See also* periodization
- Mongolia, 34, 38–41, 200, 268, 287, 298n21
- Mongol Empire, 299
- Mongols, xi n2, 13, 21, 285–295, 298–303, 308
- Montblanc, 66
- Mont Ceniz Pass, 165, 168, 173
- Moldavia, 208
- mole-rat, 33. *See also* rodents
- Morerod, Jean-Daniel, 173
- Morelli, G., et al., 11n4, 37n12, 40n18, 41, 43n21, 200n15
- Mouthon, Fabrice, 178
- Mughal Empire, 49
- le Muisit, Gilles, 314, 326
- Mujani, Wan Kamal, 128, 147
- Müller, Wolfgang P., 21
- Muntané i Santiveri, Josep Xavier, 16, 63, 73
- Musa, Mansa, 43
- dei Mussis, Gabriel, 175
- Muslims, 4, 137, 205, 261, 291.
See also Islam
- mules, 210
- Muṣallā*, 130–31
- Museu Comarcal de l'Urgell, 63, 78n29
- Museum of London, 22, 104, 309;
 Centre for Human Bioarchaeology, 97, 104, 111n8
- Myanmar, 39
- al-Nahririyya, 132–33
- Naphy, William, 169
- Napoleon, 202
- Naşir, 'Āmar Najīb Mūsā, 128, 138n6, 142n12, 145n21
- Nathan, Moxié, 68, 70
- National Endowment for the Humanities, 22, 27, 309
- natural philosophy, 137
- Nelli, Francesco, 176
- Nepal, 39, 262
- Netherlands, 199. *See also* Low Countries
- Newcastle, 107
- neutrophils, 235, 246–47
- Nile River, 17, 43, 125–38, 142–45, 150; Delta, 125, 129, 131–32, 137n5
- nomads, 34, 210. *See also* migration; Rroma people
- North America, 4, 11n4, 18, 48, 54, 161, 268, 298
- North Korea, 265
- North Sea, 18
- Norwich, 82
- nutrition, 20, 115, 126, 231–34, 247, 270–71, 290, 300–02.
See also food; malnutrition
- al-Nuwayrī, 48
- Odense University Anthropological Database, 109–10
- Omne bonum*, 309–26
- Oropysylla montana*. *See* fleas
- Oribasius, 41n20
- osteology, 123. *See also* bones
- Ottoman Empire, 3, 14, 19, 171, 196–98, 202–06, 214, 273
- oxalic acid, 302n27, 308
- oxen, 2, 139, 140, 210, 304.
See also cattle

- Padua, 176
- le Palmer, James, 310–15, 326
- Pakistan, 262
- paleodemography, 88, 109–10, 123
- paleoepidemiology, 251
- paleogenetics, 35
- paleoimmunology, 251
- paleopathology, 16, 52n35
- Pamuk, Sevkett, 128
- pandemics, ix–xvii, 5, 9–10, 13–15, 17, 19–20, 26–54, 150, 160, 175, 180, 193, 197, 201, 227, 235, 259, 260, 263–64, 269, 276; amplifying factors of, 15, 180; causes of, 160; definition of, 9n1, 197fn8; mortality of, 261, 271; spread of, 54, 211, 263, 285; types of, 198. *See also* Black Death; epidemics; First Plague Pandemic; plague; Second Plague Pandemic; Third Plague Pandemic
- parasites, 250, 274–75
- Paris, 40n17, 66n9, 165, 180n19
- pathogens, 10–12, 14, 19, 26–32, 36, 45, 52–54, 61, 65, 100, 117, 157–58, 160–61, 182–83, 194, 199, 201, 206, 231–42, 245–46, 249–51, 257–61, 264, 270–72, 275, 311; history of, 30, 36, 54, 61, 199, 200; host interactions with, 232, 237; genetic makeup of, 10, 14; origins of, 12, 30, 100; spread of, 45, 65, 232, 242, 272. *See also* *Yersinia pestis*
- Pavia, 176, 242
- pea sores, 293–94
- Pere III of Barcelona/Pere IV of Aragón, 65–67, 71
- Petrarca, Francesco, 18, 171–72, 175–76
- Petry, Carl, 127, 142n11
- phagocytes, 235, 246
- pharmacology, 293
- Pelusium, 41, 47, 198n9
- periodization, 2–8, 9n1, 150, 197–98, 227. *See also* medieval, meanings of; modernity
- Perpignan, 65
- Persia, 210
- Persian Gulf, 195, 300
- Peru, xvi, 267–69, 273
- Piacenza, 175
- da Piazza, Michele, 109
- pelts. *See* animals, pelts of; furs
- physicians 30, 168, 171, 182, 202–04, 213–15, 229–31, 261, 266, 270, 289–92, 295, 300–02; Jewish, 215
- pilgrimage, 53, 175, 200, 215. *See also* travel and travelers
- plague, amplification of, xi–xvii, 17, 157–59, 172, 309; bubonic, 32, 39n15, 171, 229, 239, 260–61, 266–69, 272, 296, 301, 312; co-infections with, 266; deniers of, xi n2, 10; diagnosis of 15–16, 22, 51, 260–69, 312; economic results of, 15–17, 69, 97–99, 125–29, 149–50, 199n5, 259, 262–63, 272; *emic* approach to, 15–16, 22, 51, 312; *etic* approach to, 15–16, 22, 51, 313; gastrointestinal, 32–33, 158, 266–67; geography of, 12, 31–33, 45; hosts of, 129, 159n3, 182, 210, 214, 287; imagery of, 168, 230, 309–14, 326; maintenance of, 17–18, 157–61, 166, 179–82, 191, 206n27, 210; mortality of, x, xv, 101, 115–17, 128, 131, 135, 141, 160, 173, 210, 240, 271; narratives of, 12, 18–19, 37, 53, 171–76, 228–29, 314, 326; outbreaks of, 10, 13–14, 17–19, 30, 43, 49–50, 59n31, 65, 82, 101, 115–16, 129–32, 135, 148–49, 159, 162, 168–70, 173, 179–81, 195–202, 211, 229, 235, 238, 246–47, 251, 259–69, 272–74, 298, 311; pharyngeal, 266–67; pneumonic, xiii, 9n1, 32, 180, 259, 260–61, 264–69, 272, 312; periodization of, 9n1, 150, 197, 227; resistance to, 238, 243; responses to, 15, 168, 232, 234, 261; seasonal factors of, 245–46; septicemic, xii, 32, 266–69, 312; studies of, 10–17, 26, 37, 115, 123, 149–50, 194–96, 214, 274, 276; symptoms of, 231, 285, 304; transmission of, 17–19, 32–34, 50, 157–59, 181, 194, 209–11, 214–16, 227, 238, 269, 274, 297n19. *See also* Black Death; documentary evidence; foci
- pogrom, 64n4, 82n33, 86n35, 96. *See also* anti-Jewish violence

- Poland, 246–47
 Polo, Marco, 1, 8, 45, 48, 301n25
 polytomy, 13, 21, 37–39, 42, 285, 288, 299–300, 308. *See also* *Yersinia pestis*; “Big Bang,” theory of
 population, 9, 17–21, 33–34, 42–44, 49n9, 53–54, 65, 69, 81, 86–88, 98–103, 106–16, 127–29, 132, 138–39, 148–50, 157–63, 173–76, 191, 207–08, 213–14, 231–51, 271, 275, 288, 291 291, 296–300. *See also* depopulation
 Po River, 164, 175
 ports, 16–18, 41, 47–48, 65, 104, 129, 172, 177, 199, 202–06, 299–300
 Portugal, 50n32
 postcolonial studies, 3, 8, 182, 294
 Potter, Felix, 179
 Prague, 74, 81n31
 prairie dogs, 12, 174, 297
 Price Smith, Andrew, 262
 Provençal Wars, 174
 Provence, 65n5, 83, 172
Pulex irritans. *See* fleas
 Pune, 201
 Pyrenees, 172, 177
- al-Qaeda, 265
 al-Qalqashandī, Aḥmad ibn ‘Alī, 130, 138n6, 142–45
 Qilian Mountains, 286
 Qinghai-Tibet Plateau, xiv, 12–18, 21, 29–33, 37, 41, 46, 53, 269, 274, 285–86, 294, 300–02
 Quanzhou, 300n23, 330
 quarantine, xv, xvi, 197, 206–07, 261–62
- rabbits, 33, 162, 213
 rats, 12, 32–33, 38–39, 47–4, 135, 159, 162, 180–82, 207, 212–15, 239–41, 247, 263n3, 266–70, 274, 297–302; *Rattus rattus*, 33, 48, 159, 161n4, 162, 177, 181–82, 207. *See also* rodents
 Rawcliffe, Carol, 273
 Red Sea, xv, 43, 477
 re-emerging infectious diseases, xi–xvii, 259–60, 265, 283. *See also* disease(s); epidemics; pandemics; plague
 Reformation, Protestant, 169
 retrospective diagnosis, problem of, 27–54, 285–304. *See also* plague, *emic* approach to; plague, *etic* approach to
 Reuss Valley, 165
 Rhine River, 65n, 165, 170
 Rhone River, 165, 179
 rhubarb, 289, 293–96, 301–02, 308
 roads and routes, 12, 26, 43, 46–47, 65, 159, 162–68, 175, 200, 207, 215–16, 267–68, 292, 299
 rodents, 14, 18, 33–34, 40–48, 54, 65, 150, 159–62, 174, 177–82, 187, 191, 206–16, 231, 235, 268, 271–74, 285–87, 297–302
 Rome, 172n14, 175
 Roman Empire, xi, 30, 165, 263. *See also* First Plague Pandemic
 Roquetes, Les, 63–64, 74, 79–83, 86–91
 Royal Society of London, 29n2, 203
 Roma people, 244–45
 Rufus of Ephesus, 41
 Ruíz Ventura, Jordi, 16
 ruminants, 33. *See also* camels
 Russell, Alexander, 202–03, 212
 Russell, Edmund, 275
 Russell, Josiah Cox, 102–03, 116
 Russell, Patrick, 202, 214
 Russia, 14, 31, 39, 54, 198, 200, 212
 Rustichello of Pisa, 1
- Sabra, Adam, 127
 Sahara, 43–44. *See also* Africa, sub-Saharan
 St. Bernard Pass. *See* Great St. Bernard Pass
 St. Gotthard Pass. *See* Gotthard Pass
 St. Mary Graces (cemetery), 106
 St. Helen-on-the-Walls, 1072
 St. Sebastian, 168, 230
 Sallares, Robert, 36n10, 41n20, 232n2, 240
Salmonella enterica, 262
 Saula, Oriol, 16
 Savoy, 65n5, 162–66, 172–74, 180, 191
 Saudi Arabia, 266
 al-Ṣayrafi, 146
 Schultz, Warren, 127
 Second Plague Pandemic, x, xi, xiv, 9–14, 19, 26, 31, 38, 61, 100, 194–98, 206–08, 216, 227, 239, 245, 298. *See also* Black Death; pandemics; plague; *Yersinia pestis*

- Severe Acute Respiratory Syndrome (SARS), x, 99, 263
- Shanga, 44, 48
- Shanghai, 299, 300n23
- Shaowu, 300
- al-Sharqīya, 129
- Shatzmiller, Maya, 65n5, 128
- sheep, 33
- Shimla, 269
- ships, 18, 46, 50, 134, 200, 287, 299–300. *See also* merchants; trade
- Shi Yuanze, 292
- Shoshan, Boaz, 127
- shrews, 48, 182. *See also* rodents
- Shouchun, 291
- Shubra, 146
- Sichuan, 292, 296–98, 303
- sieges, 204, 250, 286, 289–92, 295, 300–02. *See also* armies; war(s)
- Sierra Leone, ix, x, xiii
- Silk Roads, 12, 46, 215, *See also* merchants; roads and routes; trade; travel and travelers
- Simplon Pass, 165, 173
- Simpson, W. J., 41n20, 198n9, 209
- Sinai Peninsula, 215
- Sinop, 214n37
- Skythia, 47
- Slavin, Philip, 248, 271
- smallpox, x, xvi, 8, 264, 265
- Snowdon, Frank, 260
- Socotra Island, 47
- Söderberg, Johan, 128
- Somalia, 47
- Song Dynasty, 4, 286–88, 291–93, 296, 299, 301–03, 308
- Songjiang, 299
- South America, 11n4, 18, 30, 48, 54, 161, 260, 268
- Soviet Union, 39, 41n19
- Spain, 1n1, 63, 231. *See also* Iberian Peninsula
- Spugen Pass, 167
- squirrels, 162, 177, 212–14, 297–98. *See also* rodents
- state capacity, 263
- storks (*Ciconia ciconia*), 215, 227
- Subirà de Galdàcano, M. Eulàlia, 16
- super-spreaders, 263, 269, 272–73
- Surat, 49, 260–65, 269–73
- Sussman, George, 46, 49–50, 57, 193, 197n7, 287n5
- Swahili Coast, 48
- Switzerland, 179
- Symes, Carol, xvii, 23, 63, 157, 193, 229, 230, 259
- Syria, 41, 149, 200n16, 265
- Tafur, Pero, 214
- Taiyuan, 289, 290
- Tangut people, 285–86, 303
- Tanzania, 40n17, 45, 268
- Tao Zongyi, 289
- Tarentaise, 173
- Tarragona, 65–66
- Tàrrega, 16–17, 53, 63–91, 96, 117, 172
- Tartars, 289
- Tell el-Farama, 47
- tenrecs, 182
- textiles, xiv, 12, 46, 210–11. *See also* clothing; furs
- Thirty Years' War, 275
- Tibet, 31, 45–50
- Tibetan-Qinghai Plateau. *See* Qinghai-Tibet Plateau
- Ticino River, 164–66
- ticks, 33, 46
- Tingzhou, 300
- Third Plague Pandemic, xiv, 10–14, 20, 31–32, 38–43, 53, 180, 196–203, 208, 239, 260–61, 267–69, 274. *See also* pandemics; plague; *Yersinia pestis*
- Toulon, 64n5, 83, 86n35
- Trabzon, 206
- trade, ix, xiv–xvi, 12, 15–18, 34, 43–50, 54, 148n25, 159, 162, 165–71, 178, 216, 262, 271–72, 288, 299–300. *See also* merchants
- Transcaucasus, 208
- travel and travelers, 1–2, 11, 22, 30, 47–48, 53, 161–70, 173–75, 178–79, 200–03, 212–15, 259–62, 287–88, 297, 302. *See also* merchants; migration; nomads; pilgrimage; trade
- tuberculosis, 53, 245n20, 249
- Tübingen-McMaster Study. *See also* Bos, Kirsten, et al.
- tularemia, 264
- Tumbatu, 44, 48
- Tunisia, ix, 49n29, 198n10
- Turin, 165, 168n10
- Turkey, 39, 65n6, 199–200, 208–09, 212. *See also* Anatolia

- Udovitch, Abraham, 126
 Uganda, 40n17, 41, 267–69
 United Arab Emirates, 262
 United Nations, ix, 263–64
 United States of America, 39, 170n11, 200, 259–61, 264–65, 268; Centers for Disease Control and Prevention, 261; Department of Defense, 261; Department of Homeland Security, 264
 University of Illinois Program in Medieval Studies, 4–5
 University of Pittsburgh World History Center, 22, 27
 Uzbekistan, 38n14, 264
- Val d'Aosta, 165, 173
 Valencia, 65, 81–82
 Varlık, Nükhet, xi, 18–19, 40n17, 117, 150, 161, 171, 177n18, 180, 273, 298n21
 Vaucluse, 171–72
 vector(s), 9–11, 30, 33, 61, 150, 159n3, 182, 194, 206n27, 209–11, 216, 235, 246, 266–69, 272; vector-borne disease, 34n7, 48, 157, 191. *See also* disease(s)
 Venice, 65n6, 171–72, 266
 Viborg, 110
 Vienne, 173
 Vienna, 204
 Vietnam, xvi; Vietnam War, 265
 Vilafranca del Penedès, 66
 Villadolid, 74
 Villani, Matteo, 101, 175
 Virgil, 175
 voles, 38, 41n19, 162, 177–79, 214–15. *See also* rodents
- Wagner, D. M., et al., 11n4, 35n9, 37–38
 Walker-Meikle, Kathleen, 21
 Wallachia, 208
 Wallerstein, Immanuel, 3
 Wang Deng, 293
 war(s), 108, 150n26, 162, 167, 173–74, 182, 200, 208–09, 265, 275, 296–99, 303. *See also* armies; sieges
Waqf documents, 128
 weasels, 33, 214. *See also* rodents
 West Nile Virus, 99
 Wellcome Library, 22; Osteological Database, 105
 West Smithfield, 105
 White, Sam, 128, 196n6
 Willcocks, William, 136n5, 138–39, 143n14, 146n22
 Wittman, William, 202
 woodrats, 213. *See also* rats, rodents
 World Health Organization (WHO), ix, 36, 40n17, 200n14, 261, 264
 Wu Lien-Teh, 32n12, 129, 209
- Xia, 285–93, 300–03, 308
 Xie Shujun, 296
 Xinghai, 269
- Yanping, 300
 Yelü Chucai, 289–93, 302
 Yemen, xv, 47–49, 195, 208
Yersinia pestis, xi, xiv, xv, 10–21, 26, 29–30, 32–44, 49, 51–53, 97–99, 158–61, 173, 178–80, 183, 193, 199–200, 231, 235–36, 241–42, 245, 251, 257–65, 268–71, 274, 285, 292n12, 298, 301–02, 308–11; amplifications of, 14–15, 35, 38–41, 44, 51, 199, 236, 261, 269, 309; “Angola” strain, xiv n7, 37 (plate 1), 40–41, 42; “Big Bang” theory of (polytomy), 13, 37–39, 285; evolution of, 10–13, 19, 29, 33–35, 158, 200, 236, 274, 285, 308; identification of, 10–11, 21, 27–28, 36, 39–42, 98, 158n2, 193n1, 199–200, 208, 235n5, 264, 269–71, 299; microenvironments of, 11–12, 18–19, 46, 53, 161, 254; origins of, xi, xiv–xv, 12n6, 36–37, 285; outbreaks of, 20, 29, 98, 157, 285; phylogenetic tree of, 14, 28, 35–43, 200n15; spread of, 11–16, 21, 29–34, 44–50, 158, 172, 175, 266–68, 274, 283; virulence of, 158–60, 302n27. *See also* Black Death; pandemics; pathogens; plague; polytomy
Yersinia pseudotuberculosis, 30, 35, 40, 158
 York, 82, 107
 Yuan Dynasty, 286–97, 300–03, 308
 Yunnan, 287, 298n21, 303

- Zaire, 260
al-Zāmil, Mohammad, 128
Zhao Wenlin, 296
Zhongxing Fu, 286
Ziegler, Michelle, 20, 32, 54, 161, 182
Zifta, 146
Zimbabwe, 45, 53
zoology, 12, 31, 52. *See also* animals
zoonotics, x, xii-xiv, 31–34, 48, 53–54,
61, 157–83, 206–16, 235, 272–73

