

Cambridge University Press

978-1-107-02174-7 - Governing Digitally Integrated Genetic Resources, Data, and Literature:
Global Intellectual Property Strategies for a Redesigned Microbial Research Commons

Jerome H. Reichman, Paul F. Uhler and Tom Dedeurwaerdere

Index

[More information](#)

Index

- Access and Benefit Sharing (ABS), 91–96, 106,
110, 112, 114, 121, 142–147, 149–153, 155,
157–159, 161–163, 206, 216–219, 221, 226–230,
250, 252, 265, 284, 292, 499, 528, 537, 543,
548, 561, 599, 604, 620, 622, 643. See also
Benefit Sharing
- Facilitating scientific research, 149–154
- National Country Legislation, 94
- Non-monetary benefits, 143, 153–154, 622–623
- Resources acquired prior to the Protocol, 156
- Results of research and development, 94
- Trans-boundary situations, 156
- Utilization of genetic resources, 147, 148
- Agreement on Trade-Related Aspects of
Intellectual Property (TRIPS), 4–5, 56,
58–60, 63, 70, 72, 85, 89–90, 97–98, 100, 106,
114, 116, 131, 161, 163, 206, 245, 306, 328–329,
337, 343, 352–353, 473–475, 486, 547,
568–569, 629
- Allarakhia, Minna, 487
- Aoki, Keith, 57
- Asian Biological Resource Center Network
(ABRCN), 198–199
- Asian Bird Flu (H₅N₁), 46, 75–76, 232
- Asian Consortium for Conservation and
Sustainable Utilization of Microbial
Resources (ACM), 198, 526
- Bagley, Margo A., 162
- Beldiman, Dana, 78, 245
- Benefit Sharing, 226–227
- Calculus of royalties from commercial
applications, 284–288, 300–301
- Within a compensatory liability regime,
298–302, 607–609
- Benkler, Yochai, 486
- Big science programs in the life sciences, 25, 26
- Biological Resource Center (BRC), 28, 41, 168,
174, 179–185, 189, 191–192, 194–195, 197–200,
208, 217, 229–230, 272, 276, 279, 308, 312,
428–429, 468, 506, 509, 527–528, 530–532,
536, 541, 546, 574–575, 582, 595, 600, 640
- Biopiracy, 24, 43, 58–59, 64, 67, 74, 81, 84–87, 89,
98, 100–108, 111, 115, 138, 161, 196, 210, 214,
228, 256, 312, 504, 647
- Biosecurity, 52, 174, 176–177, 191, 202, 215, 272,
507–508, 528–530, 602
- Biodiversity International, 48, 50, 108, 116
- Blakeney, Michael, 92
- Budapest Treaty on the International Recognition
of the Deposit of Microorganisms for
Purposes of Patent Procedure, 61, 63,
68–70, 171
- International Deposit Authority (IDA), 171
- Burk, Dan L., 349
- Climate change, 18, 50, 91, 115, 131, 137, 287, 397
- Coase, Ronald, 106–107
- Common Heritage of Mankind, 2, 42, 50–52, 59,
91, 111, 141, 205
- Compensatory Liability Regime, 29, 133, 139,
260–315, 603–623
- Liability rules, 261–264
- With modifications of the accessed materials,
309–312
- With multiple owners, 307–308
- Consultative Group on International Agricultural
Research (CGIAR), 27, 48–51, 59, 90,
100–101, 103–104, 108, 112, 115–117, 119,
122–124, 126, 131–132, 135–136, 138, 140, 150,
230, 489, 496–497, 499–500, 502–504, 510,
546–549, 555, 559, 615, 637

Cambridge University Press

978-1-107-02174-7 - Governing Digitally Integrated Genetic Resources, Data, and Literature:
Global Intellectual Property Strategies for a Redesigned Microbial Research Commons

Jerome H. Reichman, Paul F. Uhlir and Tom Dedeurwaerdere

Index

[More information](#)

652

Index

- Convention on Biological Diversity, 5, 27–28, 38, 43, 46, 52, 59, 64, 75–77, 80, 82, 85, 88, 90–91, 104, 118, 131, 141, 146, 162, 173, 177, 179, 190, 200, 206, 213, 292, 427–428, 446, 459, 468, 473, 495, 507, 547, 568, 582, 604, 609, 619–620, 637, 645. See also Nagoya Protocol
- Bilateral approach, 230–231, 250–256
- Coasian model, 106–108
- and computational science, 110
- and high throughput screening, 110
- Multilateral approach, 231–249, 257–259, 265–269, 560–563
- and upstream research, 109, 110
- Copyright
- Data-mining exception, 343, 346–347
- Exception for scientific research, 345–346
- Limitations and exceptions, 327–333
- on scientific databases, 325, 337–342, 351–352
- on scientific publications, 325
- Correa, Carlos M., 128
- Craig Venter, J., 66, 452
- Declaration on Permanent Sovereignty over Natural Resources (1962), 3, 88, 162
- Digital integration, 403–405, 624–627
- and the Convention on Biological Diversity, 30
- of genetic resources, data and literature, 6, 20–22, 467–470
- and intellectual property rights, 30
- Dinwoodie, Graeme B., 348
- Due diligence, 221–224, 228
- Dutfield, Graham, 6, 102, 104
- European Culture Collections' Organization (ECCO), 113, 198, 214–218, 227, 230, 269, 470, 526, 536, 543, 602, 630
- Euzeby, J. P., 424
- Evolutionary genomics, 11
- Ex situ* public repositories, 1, 2
- Formal public service microbial collections, 38, see also WFCC
- Geographical disparities: 186–198
- History, 27, 167–198
- Informal in-house microbial collections, 38, 41, 172, 210
- Facilitated access, 123–125, 136
- Food and Agriculture Organization (FAO), 28, 32, 48, 50–51, 59, 116–120, 124, 129–130, 132, 135, 137–139, 141–143, 151–152, 242, 264, 284, 286–287, 492, 496, 498, 503, 512, 544, 547–549, 553, 555, 559–564, 579–580, 587, 589, 603, 605–606, 609, 611, 615
- Franklin, Jonathan A., 350
- Free-riding, 136, 260, 407, 438, 504, 615, 618
- Frischmann, Brett M., 477–481, 483–484
- Genetically modified organisms (GMO), 17, 56–57, 59, 61, 363
- Genomics, 10, 11
- George, Carol, 309
- Global Biological Resource Center Network (GBRCN), 178, 198–199, 230, 510, 527–545, 550, 554–560, 564–565, 574–576, 581–582, 598, 600
- Global public goods, 6, 37, 50–52, 257, 554–562
- Globally Unique Identifiers, 175, 226, 283–284
- Godt, Christine, 152, 159, 226–228
- Governance, 289–290
- Dispute resolution, 618–622
- Hybrid model (voluntary pooling by state and nonstate actors), 495, 504–525, 546–547
- Implementing the Multilateral Regime, 598–649
- Market-like model, 495, 526–543
- Nonbinding international framework agreement, 550, 551–554
- PIP undertaking, 238–240, 248–249
- Role of scientists in the decision making process, 566–567
- Top-down model, 494–504, 548–549
- Halewood, Michael, 116
- Hilty, Reto M., 350
- In situ* genetic resources, 1, 81, 83, 85, 89, 108, 121, 135, 138, 141, 151, 161, 169, 196–197, 206, 223, 288, 468, 490, 500, 562, 583, 591, 616, 634–635
- and farmers', 120
- use in microbial research, 38
- Indigenous communities, 5, 82–84, 86–91, 93, 103, 142, 156, 302, 342, 608, 611, 628
- Informal exchanges of microorganisms, 41, 167, 211
- Intellectual property and developing countries, 4, 56, 57–60, 87–91, 140
- Intellectual property and microbial genetic resources
- History, 4, 61
- and patents, 64, 65, 66, 67, 68
- and trade secrecy, 69, 70, 85
- Intellectual property and plant genetic resources
- Farmer exemption, 56

Cambridge University Press

978-1-107-02174-7 - Governing Digitally Integrated Genetic Resources, Data, and Literature:
Global Intellectual Property Strategies for a Redesigned Microbial Research Commons

Jerome H. Reichman, Paul F. Uhler and Tom Dedeurwaerdere

Index

[More information](#)

Index

653

- History, 4
- Plant Breeders' rights, 53, 60
- Plant patents, 53, 56, 57, 60
- sui generis* plant breeders' rights, 53–57
- International Board of Plant Genetic Resources (IBPGR), 48
- International Human Microbiome Consortium, 415–418, 519–526, 551–552
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), 28, 117, 119, 121, 129–131, 133–134, 137, 140–143, 164, 226, 231, 267, 286, 492, 496, 499–500, 548–549, 554, 576, 586, 607, 611, 634, 641–642,
- and intellectual property rights, 133
- Multilateral System, 118, 121–129
- Standard Material Transfer Agreement, 119, 139–141, 234–235
- International Undertaking on Plant Genetic Resources, 51, 52
- International Union for the Protection of New Varieties of Plants (UPOV), 4, 53–60
- Kamau, Evanson C., 135–136, 253
- Knowledge Commons, 2, 3, 27, 31, 242
 - Anticommons, 72
 - Collaboration and specialization in a modular structure, 488, 490
 - and common pool resources, 3, 242–243, 476–478
 - Constructed cultural commons, 478
 - Contractually constructed commons, 483
 - Funding, 32, 177–179
 - History, 485
 - to optimize option value of research infrastructures, 481–482
 - Social and intrinsic motivations, 486–487, 491
- Lee, Peter, 483
- Ma, Juncal, 426
- Madison, Michael J., 478–479, 483
- Maloy, Stanley, 8, 12
- Market for microbes
 - Value of, 14, 52
- Material transfer agreements (MTA), 29, 42, 73–74, 78, 113–114, 158, 184, 190, 200, 203–204, 209, 212–218, 227, 230, 252, 267, 269, 273, 275, 309, 474, 507, 536, 563, 569, 602. See also Standard Material Transfer Agreement
- Core MTA of the European Culture Collections' Organization, 214–218
- Legitimate exchange, 215, 216, 601–603 see also viral license
- Microorganism Sustainable Use and Access Regulation International Code of Conduct (MOSAICC), 113, 213
- US Uniform Biological Material Transfer Agreement (UBMTA), 212–214
- Microbial databases, 421–433
- StrainInfo Bioportal, 429–431
- The World Data Center for Microorganisms, 426–428
- Microbial Ecology, 10, 11
- Microbial Genomics, 22
- Microbial Research
 - for applications in agriculture and food, 7, 16, 17
 - for applications in human health, 7, 14, 15
 - and biofuels, 18
 - to conserve biodiversity, 17
 - and developing countries, 16, 74, 582–583, 628–631
 - Paradigm shift, 7–13; see also New biology paradigm
 - to protect the natural environment, 17
 - Synthetic microbiology, 17, 21
 - to understand microbial biodiversity, 7
- Molecular Biology, 10
- Mutually Agreed Terms (MAT), 88, 93–94, 97, 114, 142, 145, 147, 154, 156–160, 162, 196, 219, 222–224, 226–228, 238, 252, 279, 293, 514, 599, 619, 635
- Nagoya Protocol to the Convention, 27–30, 75, 82, 96, 99, 100, 114, 131, 141–165, 179, 183, 190, 194, 205, 209–210, 214, 216, 218–221, 224–232, 241, 248–251, 256, 269, 276, 278–279, 281, 283–284, 286, 288–289, 291, 293, 296, 302, 304, 306, 310–312, 314, 428, 468, 470, 543–544, 547–548, 554, 557–558, 560–563, 569–570, 575, 581–582, 584, 586–587, 592, 597–599, 601–602, 604–605, 607, 609–611, 613–614, 618–622, 624–625, 627, 630, 637, 643, 645–647
- European Commission's Regulation on Access to and Use of Genetic Resources, 219
- National Research Council, 7–8, 19, 22, 27, 186, 213, 372, 404, 408, 473, 537, 624, 638
- New biology paradigm, 7, 19–22
- Legal and institutional framework needed, 23

Cambridge University Press

978-1-107-02174-7 - Governing Digitally Integrated Genetic Resources, Data, and Literature:
Global Intellectual Property Strategies for a Redesigned Microbial Research Commons

Jerome H. Reichman, Paul F. Uhlir and Tom Dedeurwaerdere

Index

[More information](#)

654

Index

- OECD Best Practice Guidelines for Biological Resource Centers, 174, 272
- Ong, Burton, 83, 86
- Open access to research data, 30, 40, 458–460,
See also Open Knowledge Environments
Policies and guidelines for early data release, 409–420
- Open access to scientific publications, 360–361, 463–465
and default restrictions from copyright, 376–377
Fully open access journals, 380–387
Funders' open access mandates, 393, 395, 399–405
intermediary open access journals, 380–387
in microbial journals, 30, 375–392, 441–444
Open access fees, 378–379, 390–391
Self-archiving, 388–389
- Open Knowledge Environments (OKEs), 31, 441–470
Educational function, 456
Funding, 465–466
Multidisciplinarity in OKEs, 454–455
- Ostrom, Elinor, 3, 183, 476–479, 484
- Patents, 53, 63, see also Intellectual property and microbial genetic resources, Intellectual property and plant genetic resources
disclosure of country of origin in patent applications, 95
gene patents, 62
Patent pools, 74
Patent thickets, 45, 68–70
- Precompetitive research, 133, 254
- Prior Informed Consent (PIC), 93, 96–97, 106, 109, 112, 114, 142, 145, 147–148, 156–162, 196, 208–209, 219, 221, 223, 225–227, 279, 284–288, 293, 507, 599, 613, 635
- Proctor, Larry, 104
- Professional societies
American Society for Microbiology, 9
International Union of Microbiological Societies, 9
- Providers of genetic resources, 83, See also *in situ* genetic resources; *ex situ* genetic resources
- Quality standards, 257, 270, 271–273, 599–601
- Rai, Arti K., 162
- Reciprocity benefits, 25, 259, 264–265, 407, 434, 438, 453, 468–469, 487–488, 491, 559, 572–573, 615–618
- Redesigned Microbial Research Commons, 78, 579–644
Dispute resolution, 618–622
Funding, 637–644
Memorandum of Understanding, 582–583
Role of scientific organizations, 584–585
Scientific coordination council, 591, 594–597
- Reichman, Jerome H., 54, 127, 262, 348–349, 483
- Reputational benefits, 45, 73, 255–256, 258–259, 265, 267, 271, 274–277, 307, 313, 324, 333, 344, 365, 394, 397–398, 403, 419, 436–437, 439, 456, 465, 466, 486, 559, 573, 633
- Restrictions on the availability of genetic resources for upstream research, 52, 72–81, 100–110, 161–162
- Ronald, Pamela C., 101
- Sag, Matthew, 333
- Samuelson, Pamela, 348
- Santilli, Juliana, 108, 122
- SARS, 45, 75
- Schaechter, Moselio, 8, 12
- Schweik, Charles, 489
- Scientific databases, 362–366
Hoarding of data, 408
Pooling of databases, 407
Proprietary models, 365
as public goods, 407, 434–439
- Scientific publishing, 357–361, See also Open Access
the role of proprietary intermediaries, 359, 402–405
Royalty collection societies, 375
- Smith, David, 171, 178
- Strandburg, Katherine J., 478–479, 483
- Sulston, John, 26
- Technical protection measures (TPMs), 326, 336, 346–348
Anticircumvention norms, 334–336
Reverse notice and breakdown regime, 348
- Technology transfer offices, 73, 191, 200, 211, 213, 255, 489, 633
- Tracking, 278–283
- Traditional knowledge, 5, 84–87, 89, 91–92, 103, 105, 142, 148, 157–158, 160, 164, 196, 219, 221–222, 224, 292, 301–302, 608, 611, 613

- Transfer of technology, 73, 94, 130, 191, 194, 196,
 200, 202, 211, 213, 236, 245, 255, 299, 308, 489,
 531, 548, 622, 633
 between developed and developing
 countries, 6
- Uhler, Paul F., 320, 483
- Users of genetic resources, 82, 83
 Private sector companies, 82, 83, 235–236
 Upstream scientific researchers, 83, 149–154
- Viral License, 126, 215, 217–218, 227, 236, 499–501,
 602, 610
- Walt, David, 282
- Ward, Sarah, 102
- Wilke, Marie, 233–234, 243–244, 246
- Winter, Gerd, 147, 149, 614–615
- World Bank, 48, 116, 512
- World Federation for Culture Collections
 (WFCC), 9, 23, 38–42, 90, 113–114, 163,
 167–179, 183, 186–195, 199, 202, 205–207,
 209–211, 214, 216, 218, 226, 246–247, 249,
 271–276, 279–280, 283–284, 292–294, 305,
 314, 425–428, 431, 482, 505–510, 526–527,
 539, 543, 545–547, 551, 555, 565, 574–576,
 580–586, 588, 594, 600, 616, 619, 624–625,
 631, 638, 640
 and the Convention on Biological Diversity,
 208, 209
 and diffusion of more proprietary approaches,
 205–209
- World Health Organization, 29, 44
 Global Influenza Surveillance and
 Response Network (GISN), 44, 45,
 75, 231
 Pandemic Influenza Preparedness (PIP)
 Framework, 29, 32, 46, 231–239
- World Intellectual Property Organization
 (WIPO), 52, 66, 95, 98, 160, 196, 293, 328,
 334, 337
- World Trade Organization (WTO), 4, 52, 56,
 59–60, 63, 70, 89, 97, 234, 237, 239, 328–329,
 473, 563
 General Agreement on Tariffs and Trade
 (GATT), 52
- Yu, Peter, 45, 76