

# Index

---

- 3M Company 264  
23andMe Inc. 3  
454 Life Sciences 163  
1000 Genomes Project 2, 3, 32, 138, 158–75
- Abbott, Frederick 2, 322, 353  
Aboriginal Bush Traders 313–14  
Aboriginal medicine 314  
abstract ideas 11–12, 50, 63, 66–7, 70–71, 77, 82, 84–5, 88–90, 96, 108, 143, 288, 303  
academia 53–5, 59, 73, 181, 185, 188–90, 216, 258, 264, 288  
access to essential medicines 2, 275  
access to genetic resources 34, 49, 287, 300, 303–5, 310, 312, 318–19, 330, 366–7  
accountability 31, 141, 151, 157  
Ad Hoc Open-ended Inter-sessional Working Group on Article 8(j) and Related Provisions of the *Convention on Biological Diversity* 301  
Ad Hoc Open-ended Working Group on Access and Benefit-sharing under the *Convention on Biological Diversity* 297  
Ad Hoc Working Group on Long-term Cooperative Action under the *United Nations Framework Convention on Climate Change* 348  
Adams, Kathryn 326  
Adcock, Mike 322, 325, 328  
administrative practice and law 10, 21, 47, 173, 237, 258, 265, 379  
adventurers 42, 45–7, 256  
Advisory Council on Intellectual Property 25, 330  
Afghanistan 385  
Africa (region) 41, 56, 162, 183, 302, 304, 307, 330, 339, 355, 371, 375–6, 379, 389  
African Centre for Biosafety 340  
*African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Genetic Resources* 2000 330  
African Union 330  
Agency of Industrial Science and Technology 269  
Agovic, Amina 33, 228, 250  
agreements 16, 28, 55, 98, 140–42, 144, 147, 151, 153, 156, 163, 168, 174, 182–3, 185–7, 190, 193–201, 216, 220, 233, 235, 237, 247, 252, 270, 279, 295–6, 298, 300–301, 304–5, 309, 313, 315, 319, 336, 340, 343, 348, 353, 363, 367, 380–82, 391  
Agricultural University of Norway 378  
agriculture 14, 16–17, 28, 35, 51, 112, 217, 250, 257, 258, 279, 281, 284, 286, 307, 320–21, 323, 327, 329, 331–2, 334, 338, 340, 342, 344–5, 349–50, 352–3, 356–7, 360–67, 369–75, 378–82, 385–6, 388–91  
Agrigenetics Inc. 346  
algae 178  
Alliance of Small Island States 330, 358  
*Altana Pharma AG v. Teva Pharmaceuticals USA, Inc.* (2009) 109  
Alnylam Pharmaceuticals 219  
Altman, Jon 301  
Amazon (including the basin, rainforest and river) 44, 47–9, 52, 57  
Amazon.com 30, 43, 72–3.  
*Amazon.com v. Canada (Attorney General)* (2010) 30, 43, 72–3

- American Association for Retired Persons 89, 99
- American Civil Liberties Union 7, 9, 101
- American College of Medical Genetics 93, 99
- American Esoteric Laboratories 23
- American Fruit Growers, Inc. v. Brogdex Co.* (1931) 103–4
- American Medical Association 100, 103, 114
- American National Standards Institute 275
- American Seed Trade Association 362
- amicus curiae* briefs 12, 69, 89, 91–2, 99, 103, 105, 107, 113–14, 333
- analogies 8, 31, 106–8, 115, 117–20, 126–30, 213, 260, 286, 304
- Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, (1969) 96
- Andrews, Lori 102, 366
- animals 19, 47–8, 50, 57, 80–81, 110, 117–19, 126, 129, 213–16, 236, 238, 246, 286, 334
- Ansonia Brass & Copper Co. v. Electrical Supply Co.*, (1892) 91, 104
- anticommons 33, 55, 57, 59, 81–3, 227, 259, 271–2, 288
- antitrust law and policy *see* competition law and policy
- Aoki, Keith 322, 363–4, 367
- Apple Inc. 265
- Applera Corporation 163
- Applied Biosystems Group 163
- archives 57, 164, 167, 172–3, 298–9, 338
- Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, (2010) (en banc) 87
- Arnold, David 40
- Asia (region) 42, 48, 183–4, 302, 371, 375, 389
- Central 48, 371
- East 129, 162
- South 371
- West 48
- Association for Molecular Pathology 10, 30–31, 63–4, 79, 85, 102–3, 105, 107–8, 113–14, 130, 140, 208, 346, 350
- Association for Molecular Pathology v. the United States Patent and Trademark Office* (2010) 10, 30, 63, 79, 85, 102–3, 105, 107–8, 113–14, 130, 140, 208, 346, 350
- Association for Molecular Pathology v. the United States Patent and Trademark Office* (2011) 10, 31, 64, 79, 130, 140, 208, 261, 346, 350
- Association of University Technology Managers 107, 140–41
- In the Public Interest* 140–41
- The Atlantic 39, 40, 43, 46
- attribution 167–8, 172, 186
- Auckland District Health Board 26
- Auden, W.H. 361
- AusAID 374
- Australia 2, 8, 22–6, 28, 34, 45, 48, 57, 88, 133–5, 139–40, 145–9, 156, 183, 230, 234, 236, 246, 276–7, 282–3, 293–303, 305–9, 311–13, 315, 317–19, 326–30, 336, 349, 356–7, 366, 374, 384, 386
- Australia, legislation
- Aboriginal Land Rights (Northern Territory) Act* 1976 (Cth) 310
- Australian Constitution* 349
- Environment Protection and Biodiversity Conservation Act* 1999 (Cth) 293–4, 296, 298, 318
- Native Title Act* 1993 (Cth) 310
- Patent Amendment (Human Genes and Biological Materials) Bill* 2010 (Cth) 26, 140
- Patents Act* 1990 (Cth) 22, 25, 52, 312
- Plant Breeder's Rights Act* 1994 (Cth) 329–30, 349
- Plant Breeder's Rights Amendment Act* 2002 (Cth) 329–30
- Plant Variety Rights Act* 1987 (Cth) 329–30, 349
- Privacy Act* 1988 (Cth) 146
- Australian Government 293–4, 296–7, 300–301, 312, 317, 329, 374
- Department of Agriculture, Fisheries and Forestry 327
- Department of Environment, Water, Heritage, and the Arts 316–17
- Department of Sustainability, Environment, Water, Population and Communities 294, 315–16
- Plant Breeders' Rights Office 327

- Australian Health Ethics Committee 145–6
- Australian Law Reform Commission 24–5, 140, 146, 234
- Australian Parliament 22, 25, 26, 140, 236, 318
- Senate Standing Committees on  
Community Affairs Reference Committee 25, 140
- Senate Standing Committees on  
Legal and Constitutional Affairs 26
- Australian Research Centre of  
Excellence for Plant Energy  
Biology 357
- authors and authorship 53, 165, 172, 235
- autonomy 20, 31, 137, 145, 159, 385
- avian influenza 2
- Bagley, Margo 236
- Bainbridge, William Sims 5–6, 256
- balance 54, 63, 65–6, 82–3, 137, 142, 152–3, 155, 229, 234, 247–9, 251, 253, 274, 321, 338, 371
- bananas 342
- Bangkok Climate Change Talks 348
- Bangladesh 355
- Barcelona Climate Change Talks 348
- bark 40–41, 44–5, 311, 313
- barley 342
- Barlow, Maude 352
- Barroso, José Manuel 389
- BASF Corporation 267, 333, 335, 337–40, 373
- Bassie, Goldie 255–6
- Bawa, Raj 263, 271–2
- Bayer 333, 335, 342–5, 351
- Beckman Coulter Inc. 23
- Beijing Genomics Institute 162
- Bell, Eleanor 352, 357, 376
- benefit-sharing 49, 58, 150, 156, 295–8, 300, 303–4, 309, 312, 319, 354, 364, 366
- Bermuda Statement* 1996 32, 138, 163–4, 172
- ‘Big Science’ projects 1, 2, 35, 366
- Bilski, Bernard 11, 67
- Bilski v. Kappos* (2010) 8, 11–12, 29–30, 63–4, 69–83, 84–98, 108, 111–14, 260, 346
- biobanks 31, 131, 133–57, 166, 171, 173–4, 366
- access policy 152–3, 155, 160, 163–4
- data sharing *see* data sharing
- BioBrick Public Agreement 182, 186, 190, 195–6, 199–200
- BioBricks 32, 131, 176–7, 180–83, 185–8, 190–91, 195–201
- BioBricks Commons 182, 191, 198, 200–201
- BioBricks Foundation 182–8, 196–7, 199, 200
- biodiscovery 2, 28, 37, 293, 295–6, 305, 312, 366
- biodiversity 6, 16, 489, 51, 53, 55, 291, 293–6, 298, 301–2, 316–17, 331–3, 335, 347, 351–2, 354, 356, 358–9, 362, 366, 372, 374, 386–7
- bioenergy 35, 341
- bioethics 4, 9, 16, 27–8, 33, 102, 176, 184, 188–90, 192, 229–32, 234, 245, 247
- biofuels 7, 178, 334, 336, 340, 345–6
- Biogemma 342
- Biogen 77–9
- Biogenerator 107
- bioinformatics 5, 13, 25, 28, 122, 131, 135, 145, 160
- biological diversity 34, 52, 57–9, 294–6, 300–304, 318–19, 354, 361–2, 365, 380, 387
- biological engineering 178, 199
- biological processes 22, 24, 26–7, 58, 121, 205–6, 214
- biology 1–8, 13, 17, 26, 28, 31–2, 48, 73–4, 80, 106, 118–27, 129–30, 138, 141, 144, 176–84, 186–97, 199–201, 205, 209, 211, 214, 221, 224–6, 255, 257, 336, 357, 366
- biomass 118, 335, 342, 350–51, 357
- biomedicine 5, 7, 28, 54–5, 100, 141, 258, 277
- biopiracy 20, 29, 48–9, 51–2, 58, 351, 365, 367
- bioprospecting 20, 39–40, 44, 46, 48–9, 57–8, 309, 319
- biosecurity 4, 184

- biotechnology 2, 5, 7–10, 13, 15–21, 23, 25, 27–9, 32, 39, 48–51, 53, 56, 61, 63–5, 73–5, 82–3, 84–6, 91, 107, 109, 111, 122, 127, 133–4, 136, 139, 141–2, 156, 159, 166, 173, 176–80, 185, 186–7, 190, 195, 197–9, 201, 207–8, 214–15, 218–22, 226, 227, 232–4, 236–8, 240, 242–6, 248–60, 265–7, 269, 273, 275, 277, 286, 288–9, 295, 313, 321–2, 329, 333–7, 339–41, 344, 347, 350, 353, 355, 359, 366, 372  
 agricultural biotechnology 286, 321, 329, 333–4, 337–8, 340, 347, 350, 355, 359  
 medical biotechnology 139  
 nanobiotechnology 17, 258, 260, 266  
 Biotechnology Industry Organization (BIO) 107, 333  
 bioterrorism 184  
 Blair, Tony 1  
 Bolivia 45  
*Bonito Boats v. Thunder Craft Boats* (1989) 65  
 Bostanci, Adam 3, 32, 207  
 botanical gardens 41–4, 46, 54, 57–8  
 botany 29, 40, 41–4, 46, 54, 57–8, 308  
*Boulton v. Bull* (1795) 90  
 Bourdieu, Pierre 28  
 Bowman, Diana 287–8  
 Boyle, James 167, 179, 182, 186–7, 196  
 BP 341  
 Braithwaite, John 48  
 Brazil 44, 47, 54  
 BRCA1 9, 20, 23–4, 101–2, 110, 114–15, 350  
 BRCA2 9, 20, 23, 101–2, 114–15, 350  
 breast cancer 10, 20, 30, 63, 101–2, 109, 140, 160  
 Brennan, Paul 328–9  
*Brenner v. Manson* (1966) 111  
 British Empire 39, 40, 42–4, 46–8, 58  
 Brown, Michael 51–2  
 Brüstle, Oliver 229, 239, 241–3, 252  
 Buffett, Warren 375  
 Burk, Dan 13, 99  
 bush foods 306, 308, 313  
 business 4, 5, 9, 11, 21, 54, 74, 125, 143, 163, 193, 214–15, 219–22, 227, 250, 259, 261, 264–5, 268–72, 275, 277, 281, 306, 314, 336–7, 341, 343, 355, 375, 377, 380  
 business methods 11, 54, 71–2, 75, 84, 101  
 California, legislation  
     *Stem Cell Research and Cures Act* 2004 (California) 245  
 California Institute of Technology (Caltech) 33, 189, 238, 240  
*Californial Stem Cells* 33, 240–41  
 Calvert, Jane 3, 32, 126–7, 205, 207–8, 223  
 Canada 8, 14–17, 28, 30–31, 64, 72–3, 80, 83, 128–9, 138, 166, 183, 206, 268, 283, 340, 346, 349–50, 352, 359  
 Canada, legislation  
     *Patent Act* 1985 (RSC) 14–17  
 Canadian Biotechnology Advisory Committee 15  
 Canadian Intellectual Property Office 80  
 Canadian Parliament 15  
 cancer 9–10, 20, 24, 30, 52, 63, 74, 101–2, 109–10, 138, 140, 160, 198, 215, 221, 229, 270, 279  
 Cancer Institute of Japan 24  
 Cancer Voices Australia 24, 140  
*Cancer Voices Australia et al. v. Myriad Genetics Inc.* (2010) 24, 140  
 canola 14, 338, 342  
 Canon 269  
*Cancún Agreements* 2010 348, 391  
 capacity-building 363  
 carbon capture and storage 118, 259  
 carbon dioxide (CO<sub>2</sub>) 118, 356  
 carbon nanotubes 262  
 carbon sequestration 356  
 Carlson, Robert 4, 5, 7  
 Carnegie Institution of Washington 33, 210, 215–16  
 ‘Carnegie patent’ 33, 210, 215–16  
 Carnegie Mellon University 13  
*Carnegie Mellon University v. Hoffman-La Roche* (2008) 13  
 cars (automobiles) 44  
 CARTaGENE 31, 138, 155  
 Casid, Jill 40  
 Castle, David 16

- Caulfield, Timothy 82  
 CEA 267  
 Celera Genomics 1, 9  
 cells 3, 4, 6, 19, 21, 32–3, 74, 92–3, 106,  
 110, 114, 121–2, 126, 177–8, 203,  
 209, 211, 214, 216–17, 228–54,  
 258, 279, 282–3, 287, 342  
 Central Land Council 297–8  
 Centre de Recherche du Chul 24  
 Ceres Inc. 340–41  
 Chakrabarty, Ananda 8, 31, 50, 63,  
 65–6, 70, 82, 84, 90, 103–4, 112,  
 128, 232, 236, 250, 253, 260, 349  
 challenges for emerging technologies 6,  
 9, 12, 21–2, 25, 63, 109, 125, 127,  
 135, 137, 139, 142, 148, 152,  
 159–60, 166, 169, 173–4, 177–80,  
 183, 187, 191–2, 194, 196, 201, 206,  
 212, 222, 232, 234–5, 251, 255, 258,  
 265–8, 283, 288, 290, 293, 297, 299,  
 320–21, 323, 326, 336, 339–40,  
 343, 345–6, 359, 367, 369–71, 373,  
 376, 380, 384, 388, 391  
 Chalmers, Don 150  
 Chatzimarkakis, Jorgo 334  
 chemical engineering 127, 170  
 chemistry 3, 6, 8, 11, 31, 48, 74, 92,  
 103–7, 111–12, 114–18, 120–21,  
 123, 126–30, 144, 160, 176, 178,  
 208, 218, 220, 223–4, 257, 261, 263,  
 266–7, 284–5, 296, 316, 331–2,  
 336, 341, 345–6, 351  
 chimera 231–2  
 China 162, 233, 353–5, 376, 385, 389  
 China, legislation  
*Patent Law of the People's Republic of  
 China* 2000 (China) 233  
 chinchona tree 41, 45  
 cinematographic films 299  
 CIRTAD 342  
 civil society groups (and  
 non-governmental organisations)  
 17, 34, 57, 156, 268, 280, 285,  
 325–6, 328, 331, 378  
 Clarkson, Gavin 275–6  
 Classen 77–9  
*Classen v. Biogen* (2006) 77, 79  
*Classen v. Biogen* (2008) 77–9  
*Classen v. Biogen* (2010) 79  
 clean energy 258  
 clean technologies 17, 26, 28, 259, 261,  
 275, 334, 355, 368  
 climate change 7, 21, 34–5, 258, 261,  
 291, 320–23, 325–8, 330–31, 333,  
 335–40, 342–8, 351, 353–4, 356,  
 358–61, 366–74, 376–7, 379, 382,  
 386, 388–91  
 adaptation 338, 347, 353, 369, 371,  
 386, 390–91  
 impacts 7, 353, 356, 369, 371, 373, 382  
 mitigation 320, 322, 353, 356, 369,  
 386  
 negotiations 331–3, 359–60, 362, 368,  
 391  
 technology transfer *see* technology  
 transfer  
 climate crisis 351, 386  
 Climate Innovation Centres 348, 367  
 climate law 28  
 'climate-ready' crops 7, 34, 310–11, 327,  
 334–5, 338–9, 346–7, 350–52, 359,  
 373, 390  
 abiotic stress tolerance 336–8, 342,  
 344–5, 351  
 drought resistance 326, 352  
 environmental stress 34, 327, 332–3,  
 338, 351, 357  
 nitrogen efficiency 338–9, 341  
 Clinton, William I  
 CNRS 267  
 coastal zone 387  
*Cochrane v. Badische Anilin & Soda  
 Fabrik* (1884) 103  
*Cochrane v. Deener* (1887) 90  
 cognitive sciences 5, 21, 28, 256–7  
 cold 57, 341–2, 344, 351  
 Collier, Robert 368–9  
 Collins, Francis I, 2, 3, 74, 130  
 Colombia 340  
 colonies and colonisation 29, 39–46, 48,  
 57–8  
 commercialisation 18–19, 23, 26, 52, 54,  
 56, 69, 73, 78, 101–2, 110–11,  
 120–21, 135–7, 139, 141–2,  
 148–55, 157, 176, 178, 182, 185–6,  
 190, 194–5, 201, 205, 216, 221, 224,  
 230, 234, 239–40, 242–3, 252, 264,  
 272–6, 279–80, 285–6, 294–6, 299,  
 302, 304–6, 308–10, 313–15,

- 318–19, 321, 326, 328–9, 331, 340, 342, 347, 350, 353, 355, 364, 366
- common heritage 47, 197, 367, 380
- commons 33, 54–7, 59, 81–3, 144, 159, 167, 171, 173, 176, 179, 182, 186–7, 191, 193, 195–8, 200–201, 227, 259, 271–2, 288, 305
- see also* anticommons; BioBricks commons; Creative Commons; science commons; Traditional Knowledge commons; tragedy of the anticommons
- Commonwealth of Australia *see* Australia; Australian Parliament
- competition 14, 181, 183–4, 189, 194, 253, 259, 275, 358–9
- competition law and policy (antitrust law and policy) 259, 270, 274–5, 358–9
- compulsory licensing 21, 34, 140, 161, 272–4, 290, 325, 348, 358–9
- computational biology 6, 74, 80, 101, 112
- confidential information 147, 152, 154, 172, 313–15
- confidentiality 147, 152, 154, 172, 313–15
- confrontation 16, 112, 207, 232, 265, 278
- Congo 46
- consent 2, 16, 57, 110, 134, 137, 143, 146, 150, 152–4, 162–3, 168, 295, 298, 302, 304, 207, 310–11, 315, 318
- conservation 35, 43, 293–4, 296, 298, 301, 304–5, 307, 317, 327, 334, 343, 362–5, 378, 380–81, 383, 385–6, 390
- ex situ 385
- in situ 304, 305
- constitutional law 9, 26, 65, 71, 77, 82–3, 91, 102–3, 113, 245, 304, 349
- Consultative Group on International Agricultural Research (CGIAR) 355, 363, 367–74, 384
- consumers 55, 245–7, 257, 265, 275, 324, 359
- contract law 41, 76, 89, 140, 142, 159, 171, 174, 193, 198, 201, 206, 234, 270, 286, 295, 301–2, 324, 332, 347, 363
- Convention on Biological Diversity* 1992 (CBD) 34, 52, 58–9, 294–5, 297, 300–310, 312, 316, 318–19, 362
- converging technologies 5, 6, 16–17, 21, 28, 120, 176, 256–7, 265, 275, 279, 285–6
- Cook-Deegan, Robert 1, 82, 141, 205, 218, 226
- Co-operative Research Centres 313
- Coonan, Helen 25–6
- Copenhagen Accord* 2009 348
- copyright law 49, 113, 142, 167, 185, 196, 253, 288–9
- corn (maize) 337–40, 342–4, 346, 375–6
- corporations, and related regulation 51, 53–4, 59, 76, 86, 88, 97–9, 142, 237, 259–61, 264, 270, 285–6, 294, 302, 306, 308, 312–13, 321, 328, 337, 351, 353, 357, 376–7, 380, 384, 386, 390
- cotton 40, 338, 342, 345
- Coulter, John 22, 236
- Coulter, Maureen 49
- Council of Canadians 352
- creative capitalism 376–7
- Creative Commons 167
- ccMixer 167
- Crichton, Michael 102
- Critchley, Christine 149
- crops 7, 34–5, 48, 258, 286, 310, 320–21, 327–9, 331–47, 350–52, 356–9, 361–3, 365–8, 371, 373–5, 379–84, 386–91
- Crosby, Alfred 41
- cross licensing 187
- CSIRO 327, 356–7
- CSIRO v. Buffalo Technology Inc.* (2008) 357
- Cultivaust 329
- Cultivaust v. Grain Pool Pty Ltd* [2004] 329
- Cultivaust v. Grain Pool Pty Ltd* [2005] 329
- Cummings, Claire Hope 384
- D'Arcy, Yvonne 24

- Daiichi Sankyo Co., Ltd. v. Matrix Laboratories Ltd* (2010) 109
- Danish Council of Ethics 245
- Dash v. Van Kleeck* (1811) 253
- data sharing 2, 32, 134, 136, 138–9, 142, 150–51, 153, 155–6, 158–9, 163–4, 166–9, 171–4, 198
- databases 2, 32, 51, 110, 133–4, 136–7, 142, 147–8, 152, 156, 158–60, 162–3, 168, 171, 173–4, 188, 207, 288, 316–17, 328, 378
- Davis, Michael 297–8, 302
- De Beer, Jeremy 248
- Decision of the Technical Board of Appeal* (2005) 110
- Decision Revoking European Patent No. 0699754* (2004) 110
- Dekorte, David 275–6
- De Schutter, Olivier 321, 347, 354, 358–9
- democratizing innovation 191, 193, 199, 253, 358
- Denmark 245
- desert knowledge 313
- Desert Knowledge Co-operative Research Centre 313
- Despoja, Natasha Stott 22
- destruction of human embryos 33, 211, 228, 230–31, 238–9, 241, 243, 244, 49, 251–2
- developed countries 277–8, 332
- developing countries 7, 56, 149, 278–9, 320, 330–33, 353, 355, 358, 368, 373, 376, 385, 388
- development, human 156, 278, 366, 373  
*see also* research and development
- Diamond v. Chakrabarty* (1980) 8, 31, 50, 63, 65–6, 70, 82, 84, 90, 103–4, 112, 128, 232, 236, 250, 253, 260, 349
- Diamond v. Diehr* (1981) 66–8, 70–71, 88, 112
- Dinwoodie, Graeme 55
- disasters 323, 378, 380, 390
- diseases  
human 2–3, 7, 32, 41–2, 48, 78, 81, 92–3, 95, 99, 133, 156, 159–62, 164, 174, 178, 180, 198, 214–21, 223–4, 229, 241, 320  
plant 320, 324, 327, 332, 338, 347, 354, 361
- DNA (deoxyribonucleic acid) 3–5, 8, 10, 11, 17, 20–21, 23, 32, 57, 74, 97, 102, 105–6, 108–9, 114–16, 120, 122, 126, 129, 136, 139–41, 148, 153–4, 159–62, 173–4, 176–8, 180–82, 187, 189, 207–9, 213–14, 220, 222–3, 226, 237, 245, 265, 341
- DNA sequencing (also gene sequencing, genetic sequencing) 1, 3, 4, 9, 74, 101, 138, 161–4, 173, 207
- DNA synthesis (also gene synthesis) 4–5
- Dolbear v. American Bell Telephone Co.* (1888) 91, 97
- Domesday Book 378
- domestic law 8, 10–11, 13–15, 18, 20–22, 24–6, 33, 52, 54–5, 65, 70, 75, 82, 91, 98, 100–101, 104, 109, 113, 140, 146–7, 193, 201, 234–6, 253, 268, 270, 273, 276, 282, 293–4, 296–8, 310, 312, 317–18, 329–30, 334, 349, 358–9, 374, 377
- donors, medical 110, 137, 141, 143, 145, 153, 231, 367
- The ‘Doomsday Vault’ 35, 361, 364–5, 367, 374–5, 377, 378–88  
*see also* Svalbard Global Seed Vault
- Dow AgroSciences LLC 333, 335, 345–6
- Dow Chemical Company 335, 345–6
- Drahos, Peter 48, 110–11, 248–9, 330
- Drayton, Richard 40, 42, 44
- Drexler, K. Eric 255
- Dreyfuss, Rochelle Cooper 49, 55–6
- droughts 344, 346, 351–2, 354, 357, 371, 374, 388
- Duke University 57, 272–3, 290, 322, 363, 367
- DuPont 333, 335–6, 343, 351, 374, 384
- Dutfield, Graham 8, 27, 31, 117, 305, 330–33
- duty to research 277
- duty to invent 277
- Dyer, Gwynne 352
- Eastman Kodak 264, 267
- EC Treaty* 242
- ecological knowledge 33, 293–319
- ecology 33, 293–319, 351–2



- economic growth 14, 69, 236  
 economic rights 51, 248  
 economics 17, 122, 144, 190, 232  
 economy  
   alternative 314  
   benefits 306–7, 314, 324  
   biotechnology 232, 288  
   co-operation and development 53, 66,  
     81, 133–4, 136–7, 140, 147, 248,  
     253, 301, 376–7  
   global 254, 270  
   gridlock 55, 271  
   harm 20  
   impact 236, 249  
   knowledge 48, 69, 273, 304  
   market 27, 122, 188, 190, 236  
   performance 337  
   political 39, 46, 48, 51, 322  
   potential 342  
   significance 49  
   solutions 337  
   success 252  
   uncertainty 377  
   value 190, 234  
 ecosystems 6, 7, 49, 331, 371, 387  
*Edinburgh case* (2003) 228, 236, 238,  
 249, 252  
 education 54–5, 59, 174, 181–3, 191, 279  
 Eisenberg, Rebecca 54–5, 82, 100, 208,  
 227, 271, 288  
 Elan Pharmaceuticals Inc. 107  
*Eldred v. Ashcroft* (2002) 91  
 electricity 91, 125–6, 180, 262, 266–7,  
 269, 376  
 electronics 69, 80, 125, 167, 200, 257,  
 263, 265, 271, 283–4  
 Eli Lilly 87, 111  
*Eli Lilly and Co. v. Human Genome  
 Sciences, Inc.*, [2008] 111  
 embryos 33, 111, 210, 228–9, 230–31,  
 234–5, 237–44, 249, 251–2  
 emergencies 274, 358, 378  
 emerging technologies 5, 7, 11–12, 15,  
 17–18, 20, 22, 24, 26–30, 71, 251,  
 255, 265, 268–9, 274, 287–9  
 Empire 39, 40, 42–4, 46–8, 58  
 empirical research into intellectual  
   property and emerging  
   technologies 100, 139, 197, 224,  
   226, 259, 326, 331, 333  
 employment 152, 314  
 enabling technologies 3–4, 7, 17, 39,  
 43–4, 74, 85, 134, 256–9, 276, 290,  
 302, 314, 318, 340–41, 345, 354–7,  
 364, 370, 376  
 Endy, Drew 4, 125, 178–9, 183–5, 187,  
 188, 191–2  
 energy 7, 12, 35, 89, 118–19, 126, 163–4,  
 176, 178, 257–9, 278, 320, 322–3,  
 329, 333–4, 336–7, 340–41, 343,  
 345–6, 353, 357, 370, 376  
 energy crisis 370  
 energy efficiency 7  
 energy markets 12, 89  
 energy security 323, 333  
 engineering 4–6, 15, 17, 31, 43–4, 52–3,  
 120, 125–7, 130, 176–9, 181–4,  
 186–7, 199, 210, 235, 256–8, 266,  
 282–3, 285, 288–9, 328–9, 332,  
 341, 350–52, 384  
 entrepreneurs 14  
 environment 2, 14, 16, 19–21, 28, 32–4,  
 40, 43–4, 47, 54, 74, 110, 118–19,  
 130, 133, 137, 144, 159, 171, 173,  
 176, 187, 206, 223–4, 250, 257–9,  
 262, 268, 278–83, 286–7, 290,  
 293–5, 303–5, 307, 315–18, 321,  
 323–4, 326–9, 332–4, 337–8, 340,  
 344–5, 349–54, 357, 362–3, 366,  
 368, 370, 372–3, 378–9, 385–6, 390  
 environmental justice 351  
 environmental law 2, 28, 281, 302, 305,  
 366  
 environmental protection 258, 281, 290,  
 293–4, 296, 298, 317, 321  
 Environmental Protection Agency  
 (EPA) 281  
 environmental risks 19, 110, 282  
 environmental stresses 34, 327, 332–3,  
 338, 351  
 environmentalism 321, 379, 386  
 environmentally sound technologies *see*  
   clean technologies  
 enzymes 180  
 epigenetics 3, 74, 205  
 equity 16, 34, 58, 149, 288–9, 293, 300,  
 303, 310, 318, 325, 330, 354, 362,  
 372, 375



- ETC Group 17, 34, 268–9, 279–81,  
284–6, 328, 335, 338–9, 350–51,  
372–4, 386
- ethanol 118
- ethics 4–5, 9, 14, 16–20, 22, 27–8, 31, 33,  
58, 73, 99–100, 102, 111, 134–5,  
137–8, 141, 145–8, 150–52, 159,  
166–7, 169, 171, 176–7, 179,  
183–4, 188–90, 192, 206, 228–36,  
238, 240, 244–5, 247, 249–55,  
258–9, 268, 277–81, 283–4, 286–9,  
293, 295, 298, 301, 317, 366
- Ethiopia 374, 385
- European Biotechnology Directive* 1998,  
8, 18, 20–21, 111, 234, 238, 242–4,  
249
- European Commission 206, 242, 276,  
356, 389
- European Convention for the Protection  
of Human Rights and Fundamental  
Freedoms* of 1950 238
- European Court of Justice 18, 20, 97,  
111, 240, 242–4, 252, 347
- European Group on Ethics in Science  
and New Technologies 206, 244
- European Parliament 18, 20–21, 234,  
236, 249, 268, 334
- Resolution on Patents for  
Biotechnological Inventions*  
(2005) 20
- Resolution on the Patenting of  
BRCA1 and BRCA2* (2001) 20
- Resolution on Regulatory Aspects of  
Nanomaterials* (2009) 21, 268
- Resolution on Trade and Climate  
Change* (2007) 21
- European Patent Office (EPO) 18,  
20–22, 33, 88–9, 109–10, 129, 228,  
248–9, 265–9, 328, 349
- European Union 8, 18–19, 33, 161, 183,  
240, 242–3, 268, 273, 276, 281, 340,  
356
- Euthanasia Compositions/ Michigan  
State University* (2005) 19, 231
- Evans v. Eaton* (1816) 90
- EvoGene 335, 342–3
- explosives 284
- exports 252, 346, 376
- ExxonMobil 178
- fair access 174
- fairness 16, 34, 135, 152, 161, 172,  
174–5, 236, 243, 300, 303, 307, 310,  
318, 362, 366, 384
- famines 358, 390
- farmers 17, 34, 325–7, 330–32, 336–40,  
345–8, 351–4, 359, 362–3, 370–71,  
376, 383–6, 389, 390
- farmers' rights 17, 34, 52, 325–6, 330,  
331–2, 346, 347–8, 351–4, 359,  
362–3, 384–6
- fast-track schemes and channels for  
green patents and plant breeders'  
rights 328
- Faunce, Thomas 282–4
- Federal Court of Australia 24, 140, 329
- Full Court of 329
- Federal Trade Commission 259, 270
- federalism 296
- Federico, Pasquale J. 104
- financial benefits 149, 188, 246, 251,  
313, 346, 365, 372, 387, 390
- financial donors 367, 370–72, 384
- Finland 28
- Fire, Andrew 205, 210, 212–13, 215
- First Amendment 99, 108
- flexible licensing 348, 354–5
- floods 34, 220, 342, 351, 354, 371, 374,  
388
- flowers 44, 47, 50, 52, 209, 342
- food 6, 35, 48, 102, 109, 257–8, 260,  
278–9, 281–2, 284, 286, 291,  
306–8, 310, 313–14, 320–23, 326,  
328–9, 330–33, 335–7, 340–41,  
343–4, 347, 349–52, 354, 357–9,  
361–7, 369–76, 378–83, 385–91
- food security 35, 291, 320–23, 326,  
330–33, 336, 352, 357–9, 361–2,  
366–7, 369–70, 372–6, 382, 385–6,  
388, 389–91
- food shortages 358, 390
- Ford, Henry 44
- Ford Foundation 367
- Ford Motor Corporation 44
- forestry 29, 47–50, 307, 320, 327–9, 356,  
379
- fossil fuels 6–7, 334, 345
- Foundation for Taxpayer and  
Consumer Rights 245–7

- Foundation for Taxpayer and Consumer Rights v. Patent of Wisconsin Alumni Research Foundation* (2010) 245–7
- Fourmile, Henrietta 295
- Fowler, Cary 361, 365, 374, 380–84, 388, 391
- France 28, 44, 46, 52, 109, 117
- ‘free revealing’ 143, 191
- Free Software Foundation 195
- freedom of speech 9, 101, 108, 238
- freedom to operate 66, 81, 101, 108, 187–8, 198, 272, 276–7, 355
- ‘freedom to tinker’ 272
- funding agencies 1–2, 31–2, 45, 135, 137–9, 143, 154, 158–9, 162–4, 166–71, 173, 190, 193–4, 220, 237, 245, 276–7, 280, 284, 295–6, 301, 327, 355, 365, 372, 374, 378, 384
- Funk Brothers Seed Co. v. Kalo Inoculant Co.*, (1948) 87, 104, 112
- Gajarsa, Arthur 272, 290
- Garnaut, Ross 320
- The Garnaut Climate Change Review* 320
- Garner, Helen 255
- Gates, Bill 339, 372, 374–6, 384
- Gates, Melinda 339, 372, 374–6, 384
- Gates Foundation 339, 372, 374–6, 384
- Gen-Probe Inc. 23
- Gendreau, Ysolde 14–15
- gene-centrism 205–6, 218, 222, 224–5
- gene expression 32, 74, 80, 181, 210–11, 214, 219–20, 222, 224, 227, 336
- gene patents 9–10, 13, 18, 20, 22, 24–7, 33, 73, 82, 101–2, 109–11, 140–41, 198, 206–8, 234, 236
- gene silencing 210–11, 213–14
- Generation Challenge Programme 376–8
- Generation Scotland 31, 138, 152–5
- genes 4, 6, 9, 11, 14, 17, 20, 23–6, 30, 64, 101, 106, 108, 110, 114, 116–17, 122, 125, 130, 140, 160–61, 164, 177–8, 206–15, 217–20, 222–5, 235, 245, 258, 332, 338, 340, 342, 350–51, 357, 385
- genetic engineering 177, 179, 181, 183–4, 210, 235, 285, 328–9, 351–2, 384
- Genetic Technologies Limited 8, 22–4
- Genetic Technologies Limited v. Berkman Coulter Inc. et al.* (2010) 23
- Genetic Technologies Limited v. American Esoteric Laboratories et al.* (2011) 23
- genetic testing 18, 23, 139–41, 198
- genetic use restriction technologies (GURTS) 17, 332, 347, 353
- genetically modified organisms (GMOs) 17, 34, 229, 258, 286, 332–3, 352, 359, 383
- Genographic Project 2, 366
- Genome Canada 166
- Genome Wide Association Studies (GWAS) 138, 145, 170, 174
- genomes 1–4, 9, 26, 32, 43, 51, 53, 57–8, 73–4, 101, 106, 111, 133, 138, 145, 158–68, 170, 173–4, 176, 205, 207–8, 212–14, 218, 222–4, 285–6, 366
- genomic mapping 8, 22
- genomics 1–3, 8–9, 13, 16, 22, 25, 28, 30, 32, 57, 61, 64, 73–5, 80–81, 112, 136–8, 145–7, 151, 155–6, 158–60, 162–4, 166, 168, 172, 174, 176, 178, 207–8, 213–14, 220, 223, 240, 252, 254, 340, 366
- genotypes and genotyping 3, 74, 80, 145, 165, 173–4
- geo-engineering 17
- geography 2, 45, 52, 73, 162
- Germany 54–5, 231, 241, 264, 357, 374
- germplasm 48
- Geron Corporation 237, 244
- Gilbert, Natasha 372
- Gilead Sciences Inc. 107
- Gitter, Donna 2, 32, 139, 158–9, 161, 166, 173
- global climate 335–7, 346, 370–71, 386
- Global Crop Diversity Trust 35, 373–5, 379–80, 384, 388, 390–91
- global warming 7, 35, 342–3, 346, 361, 377, 382
- globalisation 56, 303–4, 323, 352, 371
- GNU General Public License 195

- Golan v. Holder*, (2009), (2010), (2011) 91, 113
- Gold, Richard 15–17, 31, 73, 82, 133, 141, 277
- ‘gold rush’ 9, 33, 205–6, 218, 227
- Golden Rice 55, 355
- Gottschalk v. Benson* (1972) 12, 66, 69, 75, 87, 89–90
- governance 29, 133–47, 149–52, 155, 157, 168, 192, 287, 307, 321, 371, 384
- Graham v. John Deere* (1966) 65, 91
- GRAIN 331
- Grain Pool of Western Australia 349
- Grain Pool of Western Australia v. Commonwealth* (2000) 349
- Grain Pool Pty Ltd 329
- grants 139–40, 145, 166–8, 170–71, 174–5, 190, 375
- Green Party (Europe) 19
- Green Revolution 344, 368, 375–7
- greenhouse gas emissions 334, 339, 345, 356
- greenhouses 43
- Greenpeace 239, 241, 243, 248–9, 352
- Greenpeace v. Oliver Brüstle* (2006) 236, 239, 241–2
- greenwashing 384
- Griffith University 294, 311–14
- Guibault, Lucie 55
- Gurry, Francis 322–3
- Halbert, Debora 51
- Hall, Alison 147
- Hamson, C.J. 87
- haplotypes 2, 22, 159, 161
- HapMap *see* International HapMap Project
- Haraway, Donna 50, 53
- Harradine, Brian 22
- Hartranft v. Wiegmann* (1887) 90, 103
- Harvard College v. Canada (Commissioner of Patents)* (2002) 14, 31, 128
- Harvard OncoMouse 14, 19, 31, 50, 128–9, 236, 238, 286
- Harvard/Onco-mouse* [1989] 19
- Harvard/Onco-mouse* [1990] 19, 286
- Harvard/Transgenic Animals* [2006] 286–7
- Harvard University 14, 19, 31, 50, 128–9, 172, 180, 236, 238, 277, 286
- Haussecker, Dirk 217, 219–20, 227
- Hayden, Cori 49, 58
- Headrick, Daniel 43
- health-care 2, 7, 9, 10, 15, 16, 23–6, 28, 33, 48, 56, 58, 74, 81, 98, 101, 109, 110, 118, 133–6, 139, 141, 145–8, 152–6, 159–65, 167–8, 170–71, 174, 176–7, 224, 229, 232–4, 236–7, 240, 252, 254, 258–9, 268, 279–80, 282–3, 286–7, 290, 306, 322, 324, 329, 333, 338, 343, 353–5, 371–2
- health information 133, 145, 146
- heat 34, 263, 341, 344, 346, 351–2, 374, 380, 388
- Heffernan, Bill 25–6
- Heller, Michael 55, 227, 271, 288–9
- Helweggen, Wim 273–4
- Henaghan, Mark 26
- Henkel, Joachim 178, 188, 190, 192
- heritage 47, 197, 294, 296, 299, 301, 303–4, 315–17, 367, 380
- Hewlett-Packard 264
- High Court of Australia 349
- higher life forms 14–15, 119, 128–9
- Hilgartner, Stephen 7, 28–9
- Hippel, Eric von 43, 191–3, 199–200
- history 6, 8, 11, 16, 29, 37, 39, 41, 44, 46–52, 54, 56, 68–9, 71, 84, 91, 102, 104, 112–13, 121–3, 125, 127, 206–7, 209, 211, 217, 238, 249, 255, 264, 272, 289, 299, 322, 354, 366, 374, 378
- HIV/AIDS 2
- Hobhouse, Henry 41
- Hoffman v. Monsanto Canada Inc.* (2007) 359
- Holcombe, Sarah 33–4, 293, 298–9, 313
- Holmes, H.M. 87
- Honingsbaum, Mark 41–5
- Hooker, Joseph 42
- Hooker, William 42
- Hope, Janet 142, 195
- Howard Florey Institute 19
- Howard Florey Institutel/Relaxin* (1995) 19, 129, 286
- Hubicki, Stephen 332
- Hughenoltz, Bernt 55

- human cloning 231, 253  
 human genome 1–4, 9, 26, 106, 133, 138,  
 158–9, 161–4, 166, 213, 366  
 Human Genome Diversity Project 2  
 Human Genome Organization  
 (HUGO) 207  
 Human Genome Project (HGP) 1, 2–3,  
 26, 106, 133, 138, 158, 161, 163–4,  
 166, 366  
 Human Genome Sciences 9, 111  
 human rights 9, 20, 238, 317, 352  
 human tissue 133, 141, 146–7, 150  
 humanitarian technologies and  
 licensing 321, 342, 355–6  
 Hunt, Geoffrey 259, 281, 288  
 hydrogen 118
- IBM 264, 267  
 Illumina Inc. 163  
 imports 252, 340, 383  
 IMS Health 48  
*In re Alappat* (1994) 87, 114  
*In re Bilski* (2008) 29–30, 65–9, 74,  
 78–80, 82–3, 86, 90–91, 94–5, 108,  
 112, 260  
*In re Fisher* (2005) 13, 111, 346  
*In re Grams* (1989) 75–6, 92  
*In re Kubin* (2009) 13, 346  
*In re Meyer* (1982) 76  
*In re Thuau* (1943) 104  
 incentives 2, 46, 49, 54, 58, 82, 99, 111,  
 171, 190–91, 193, 206, 234, 248,  
 251, 267, 329, 335, 364, 377
- Incyte 9  
 India 42–7, 52, 233, 258, 284, 330, 351,  
 353, 355, 374, 376, 385, 387–8  
 India, legislation  
*Patents Act* 1970 (India) 233  
*Plant Variety Protection and Farmers’  
 Rights Act* 2001 (India) 330  
 Indian Doomsday Vault 387–8  
 Indigenous communities 34, 41,  
 293–319, 363  
 Indigenous cultural and intellectual  
 property 34, 293–319  
 Indigenous ecological knowledge 33,  
 293–319  
 Indigenous interests 295, 318  
 Indigenous knowledge 20, 39, 49, 53,  
 293–319
- Indigenous land and land management  
 297, 302, 317  
 Indigenous legal issues 29  
 Indigenous peoples 34, 293–319  
 Indigenous studies 29  
 Indonesia 355  
 Industrial Age and the industrial  
 revolution 12  
*Industries Ltd. v. Commissioner of  
 Patents*, [1986] 80  
 industry 8, 10, 13, 20, 27, 29, 39, 48–9,  
 69, 99, 101, 107, 117–19, 121, 129,  
 136, 139, 143–4, 154, 178, 187, 191,  
 201, 208, 216, 226, 232–3, 239–40,  
 242–4, 246, 252, 254, 258–9, 261,  
 267, 269–70, 275–80, 285, 288,  
 290, 306, 313–14, 321, 325, 328–9,  
 333, 340, 366, 386  
 information technology 5, 7, 17, 21, 28,  
 87, 90, 121–3, 142, 173, 176, 189,  
 198, 255–7, 265, 275, 284, 288  
 informed consent 16, 57, 146, 162, 295,  
 298, 302, 304, 310–11, 315, 318  
 innovation 13, 15–16, 21, 28–30, 32,  
 43–4, 49–51, 55, 57, 63–5, 69–70,  
 74–5, 77, 82–3, 86, 89, 99–101, 139,  
 143–4, 160, 182, 191–3, 199–201,  
 206, 227–9, 232–4, 247–8, 250,  
 252, 254, 256, 259, 267–8, 270–76,  
 289, 300–301, 304, 322, 327, 329,  
 336–7, 345–8, 351, 353–5, 358–9,  
 364, 367, 377, 380
- insects 47  
 insurance 378–9, 382, 388  
 Integra Lifesciences I, Ltd. 49  
*Integra Lifesciences I, Ltd. v. Merck  
 KGaA* (2003) 49  
 integration 4, 6, 64, 112, 138, 227, 293  
*Intel v. CSIRO* (2006) 357  
 intellectual property management 16,  
 136–7, 144, 232, 298–302, 315,  
 317, 354–6  
 intellectual property rights *see*  
 confidential information;  
 copyright law; patent law; plant  
 breeders’ rights; trade mark law;  
 trade secrets
- Interleukin Genetics Inc. 23  
 International Cancer Genome  
 Consortium 128

- International Expert Group on  
Biotechnology, Innovation and  
Intellectual Property 15–16, 232
- International Genetic Engineered  
Machine competition (iGEM)  
181, 183–4, 187–9, 193–4, 196,  
199–201.
- International HapMap Consortium 2,  
138, 159, 161, 168
- International HapMap Project 2, 138,  
159–62, 168
- International Institute for Environment  
and Development 353–4
- international law 2, 28, 42, 47, 49–50,  
53, 230–31, 284, 322, 381  
*see also individual treaties and  
conventions*
- International Treaty on Plant Genetic  
Resources for Food and Agriculture*  
2001 35, 362–5, 373–4, 381, 384–5
- Internet 12, 14, 47, 198, 276, 279, 288,  
338
- introns 22, 106, 115
- inventors 7, 29, 63, 65, 75, 83, 97, 180,  
193–4, 206, 229, 246–7, 251–2,  
259, 264, 272, 314, 380
- investment 7, 10–11, 73, 87, 115, 119,  
139, 157, 173, 178, 219, 246–8, 252,  
268, 270, 276, 281, 284, 326,  
328–31, 339, 343–6, 359, 366–71,  
376–7, 390
- IP Australia 22, 307–9, 311
- iPod Nano 265
- Iran 385
- Ireland 374
- Isis Pharmaceuticals 209, 219
- Israel 342, 349
- Italy 389
- J. Craig Venter Institute 176, 178
- Janke, Terri 33–4, 293–4, 296, 298, 300,  
306, 309, 315
- Japan 24, 53, 142, 264, 267–9, 276, 317,  
336
- Japan Patent Office 267, 269
- Japan Science and Technology Agency  
267, 269
- Jarcho, Saul 41
- Jarlmadangah Burru Aboriginal  
Corporation 294, 311–14
- Jarlmadangah Community 294, 311–14
- JEM Ag Supply Inc. 260, 333, 337, 346,  
349
- JEM Ag Supply Inc v. Pioneer Hi-Bred  
International Inc* (2001) 260, 333,  
337, 346, 349
- Johnson, Mark 119
- Joly, Pierre-Benoit 32, 223
- Joly, Yann 29–30, 63, 73, 82, 142, 186,  
198–9
- Jungerson v. Ostby and Barton Co* (1948)  
248
- Kakadu (Northern Territory) 34,  
294–5, 305–10, 313, 319
- Kakadu Plum 34, 294–5, 305–10, 313,  
319
- Kamau, Evanson 366
- Kappos, David 8, 11–12, 29–30, 63–4,  
69–83, 84–98, 108, 111–14, 260,  
346
- Karjala, Dennis 289
- Kay, Lily 121
- Kaye, Jane 134–5, 137, 147, 149
- Keasling, Jay D. 125, 177–8
- Keller, Evelyn Fox 125, 224
- Keneally, Thomas 358
- Kenya 331, 353
- Kerr, Ian 255–6
- Kevles, Daniel 50, 206
- Kew Gardens *see* Royal Botanic  
Gardens, Kew
- Kieff, F. Scott 82, 100
- Ki-Moon, Ban 389
- King Charles III of Spain 42
- Kloppenburger Jr., Jack 39, 48, 51, 322
- Knight, Tom 179
- Knoppers, Bartha 16–17, 73, 150, 156,  
366
- knowledge 2, 5–6, 20, 28–9, 33, 39–40,  
43–4, 48–9, 51–6, 59, 69, 74, 83,  
87–8, 99–100, 107, 112–13, 136,  
142–3, 154, 177, 182, 185, 190, 192,  
196–8, 214, 247, 266, 273, 283,  
293–319, 324, 330, 341, 347, 366,  
368–70, 378, 382  
*see also* ‘storehouse of knowledge’;  
traditional knowledge
- knowledge economy 48, 69, 304, 402
- Koppikar, Vivek 264

- Korea Republic of (South Korea) 264, 268
- Krattiger, Anatole 354–5
- KSR International Co. v. Teleflex Inc.* (2007) 96, 346
- L'Oreal 267
- laboratories 4, 12, 23, 30–31, 50, 53, 57–8, 75, 76, 79, 85–6, 92–5, 97–100, 113, 121, 130, 154, 163, 168, 180, 200, 210, 230, 236, 257, 260–61, 267, 346
- Laboratory Corporation of American Holdings (Labcorp) 76, 86, 97, 99, 261
- Laboratory Corporation of American Holdings v. Metabolite Laboratories, Inc.* (2006) 76, 86, 97, 99, 261
- Lakoff, George 119
- Lapérouse 52
- Lapland 40
- Lappe, Anna 374, 386
- lasers 272
- Latour, Bruno 43–4, 50, 52
- Laurie, Graeme 19, 136, 247
- Lavoisier, Antoine 121
- Lawson, Charles 364
- lawyers 130, 159, 166, 183, 185, 313, 322
- Le Roy v. Tatham* (1853) 84
- Leahy, Patrick 14, 91, 270
- Least Developed Countries (LDCs) 330, 358
- Leder, Philip 50, 236
- Ledger, Charles 45–7
- Ledger, George 45–6
- Lee, Alexander 275
- legal theory 39, 82, 84–6, 88–9, 100, 102, 108–9, 116, 123, 127, 188, 199, 206, 209, 229–30, 260, 288
- legitimacy 21–2, 31, 118, 140, 265, 269, 287, 299
- Lemley, Mark 13, 70, 96, 276, 289, 290
- Lerner, Josh 232
- Lewontin, Richard 3
- libraries 2, 57, 172, 180, 225, 278
- licensing 21, 23, 34, 55, 76, 93, 98, 139–42, 144, 147, 155, 161, 183, 186–7, 195, 198–9, 216, 219, 226, 233, 246, 270, 272–7, 290, 325, 340, 354–5, 357–9
- exclusive 23, 49, 93–4, 102, 219, 234, 239, 272, 329, 340, 343, 359
- non-exclusive 140, 216, 277, 301
- see also* compulsory licensing:  
cross-licensing; flexible licensing;  
open licensing; public sector  
licensing; sub-licensing
- Liddell, Kathleen 147
- Life 1.0 122
- Life 2.0 122
- life forms 8, 14, 31, 119–20, 124, 127–30, 177, 232, 236
- life sciences 1, 6–8, 27, 31, 49, 57, 117–19, 127, 151–2, 163–4, 173, 177–8, 189, 205–6, 208, 227–8, 240, 242, 248, 251–4
- Lilypilly Australia 308
- Linnaeus, Carl 46
- Llewelyn, Margaret 110–11, 322, 325, 358
- Loctite Corp. v. Ultraseal Ltd* (1985) 96
- Löfling, Pehr 41, 48, 56
- Loving Earth 310
- lower life forms 128
- Lowell v. Lewis* (1817) 235
- Lyall, Catherine 151
- Maathai, Wangari 279
- Mackay Radio & Tel. Co. v. Radio Corp. of America* (1939) 87
- Madey v. Duke University* 272–3, 290
- malaria 29, 41–6, 56, 178
- Mamani, Manuel Inca 45–6
- mammals 50, 211, 216–17, 219, 221, 238, 240–41
- Mandel, Gregory 286
- The Manhattan Project 366
- manufacturing 8, 46, 107, 185, 200, 255, 257, 262, 270–71, 276, 280, 283, 358
- Mara, Kaitlin 326
- Marchant, Gary 255, 281, 289
- Marjarla tree 34, 293–4, 311–14, 319
- marketing 315
- markets 12, 27, 48, 55–6, 67, 74, 89, 191, 201, 209, 230, 248–9, 257, 259, 265, 267, 270–71, 275, 277, 280–82,

- 289–90, 306, 313, 319, 322–4, 326,  
328, 331, 336, 338, 340, 351, 359,  
373, 377
- Markham, Clements 45, 47
- Mary Kay Inc. 34, 294–5, 305, 307–10,  
313, 319
- Maskus, Keith 56
- Massachusetts Institute of Technology  
(MIT) 179, 180–81, 183–4, 188,  
284
- Institute for Soldier  
Nanotechnologies 284
- Material Transfer Agreements 142, 147,  
151, 156, 187, 363–4
- materials science 257, 266, 269, 283
- mathematics 4, 6, 11, 75–6, 88, 120,  
261–2
- Matsushita Electric Industrial 267
- Mattick, John 213
- Maurer, Stephen 178, 188, 190, 192
- Mayo Collaborative Services 12, 30,  
78–80, 85, 92–5, 97, 99, 113, 261
- Mayo Collaborative Services v.  
Prometheus Laboratories, Inc.*  
(2011) 79, 98–9, 112–13, 261
- McLennan, Alison 1, 32–3, 176, 255,  
366
- McManis, Charles 100, 364
- McSherry, Corynne 54
- mechanical inventions 8, 31, 112, 117,  
120, 123, 126–7, 130, 233, 236, 248,  
260, 263, 266, 272, 349
- mechanisms
- access 259, 354
  - biological 31, 123–4, 130, 205, 212,  
221, 284
  - data release 170, 172
  - legal 33, 83, 143, 183, 201, 300, 365
  - open source 188, 191, 354
  - political 7, 168, 384
  - regulatory 83, 137, 139, 146, 151, 190,  
199, 256, 299, 300, 302, 328
  - technology 348
- Medical Research Council (United  
Kingdom) 167, 169–71, 174
- medicine 2, 3, 5, 7, 12–13, 16, 25, 28–9,  
48, 51–2, 54, 55, 57, 61, 71, 84,  
99–100, 112, 138, 141, 150, 174,  
178, 210, 213, 217, 219–20, 225,  
229–31, 236, 247, 255, 257–8, 260,  
263, 275, 277–8, 289, 306, 308, 309,  
314, 366
- ‘medicine cabinet’ 29, 48
- Mehta, Michael 259, 281, 288
- Mello, Craig 205, 210, 212, 215
- Mendel Biotechnology Inc. 335, 341
- Merck KGaA 49
- Mertec LLC 342
- Merton, Robert 197–8
- metabolite 4, 30, 78, 92–7, 108, 125, 180
- Metabolite Laboratories Inc. 76, 86, 97,  
99, 261
- Metabolite Laboratories, Inc. v.  
Laboratory Corporation of  
America Holdings* (2004) 76, 99
- metaphors 31, 117–21, 123, 127, 214,  
229–30
- methods of human treatment 27, 80, 81,  
110
- Mexico 49, 340
- Mgbeoji, Ikechi 20, 49–50
- Michigan State University 19, 287
- micro-organisms 117–18, 128–9
- microbes 1, 118–19, 126, 128, 285
- Micron Technology 264
- Microsoft 85, 357
- Microsoft v. CSIRO* (2007) 357
- military, the 283–4, 290
- Miller, Philip David 40
- Mills, Oliver 234
- minerals 50, 106–7
- Mirrarr People 308
- Molecular Pathology Laboratory  
Network Inc. 23
- monopolies 46, 77, 206, 234, 247, 251,  
269, 274, 284, 351
- Monotti, Anne 277
- Monsanto 14, 15, 20, 23, 97, 111, 333,  
335, 338–41, 343, 346–7, 349–52,  
359, 373, 386
- Monsanto Canada Inc. v. Schmeiser*  
(2004) 14, 346, 349, 352
- Monsanto Technology LLC v. Cefetra  
BV and others* (2010) 20, 97, 111,  
347
- Mooney, Patrick 374
- Moorehead, Anne 369
- Morange, Michel 121–2
- morality 18–20, 27, 33, 110–11, 233–42,  
247–54, 286



- Morse, Jeremy 309, 313–15  
*Morton v. New York Eye Infirmary*  
 (1862) 87, 90  
 museums 58  
 music 167  
 Mutis, José Celestino 42  
 Mutugu, Josephine 368–9  
 Mycogen Seeds 346  
 Myriad Genetics Inc. 8, 9, 10, 13, 23–5,  
 30–31, 63–4, 79, 85, 101–3, 105,  
 108–9, 113–16, 130, 140, 208,  
 260–61, 346, 350
- Nagoya Protocol* 2010 34, 294, 300,  
 302–3, 309, 318–19  
 nano-capsules 258  
 nano-convergence 6  
 nano-encapsulation 257  
 nano-foods 258, 260  
 nano-imposters 265  
 nano-machines 272  
 nano-scale 279, 281, 284–6  
 nano-seeds 257  
 nano-therapeutics 260  
 nanobiotechnology 17, 258, 260, 266  
 Nanoco Technologies Ltd. 271  
 nanomagnetics 266  
 nanomaterials 21, 260, 264, 266, 268,  
 280, 282, 283  
 nanomedicine 258, 260, 263  
 nanometres 255–6, 261, 266, 268  
 Nanosys Inc. 271  
*Nanosys Inc. v. Nanoco Technologies*  
*Ltd.* (2009) 271  
 nanotechnology 5–8, 17, 21, 25–6, 28,  
 32–3, 112, 203, 255–90  
 National Academies (United States) 6,  
 141, 183, 187, 191–2, 194, 196, 201,  
 214  
 National Geographic 2  
 National Health and Medical Research  
 Council (Australia) 133–5, 146–8  
 National Human Genome Research  
 Institute 161–2, 164  
 National Institute for Materials Science  
 269  
 National Institute of Advanced  
 Industrial Science and Technology  
 269  
 National Institutes of Health (NIH) 9,  
 68, 101, 139–40, 145, 159–65, 168,  
 170, 174, 237  
 National Research Council of the  
 National Academies 6, 141  
 National Research Development  
 Corporation 88  
*National Research Development*  
*Corporation v. Commissioner of*  
*Patents* (1959) 88  
 National Science Foundation (NSF) 5,  
 21, 53  
 Natural Heritage Trust 315–16  
 Natural Justice 302, 304–5  
 natural resource management 293–4,  
 296, 297–302, 306, 315, 369  
 Natural Resource Management Board  
 (Northern Territory) 293–4,  
 296–9, 301, 306  
 Natural Resource Management  
 Ministerial Council 296, 316  
 nature 5, 8–11, 16, 24, 26, 29, 40, 42, 44,  
 46, 49–51, 58, 63, 66, 71, 77, 82, 84,  
 86–7, 90, 94–6, 98, 103–7, 109,  
 111–12, 114–17, 126–7, 129, 177,  
 207–8, 232–3, 235, 256, 260, 285,  
 306, 309, 350, 380  
 Nature Publishing Group Journals 1, 2,  
 3, 4, 73–4, 106, 127, 138, 141–2,  
 144, 158–9, 169, 171–3, 178–9,  
 183, 186–7, 190, 198–9, 210–11,  
 213–15, 218–22, 226, 229, 230,  
 237, 242, 244–5, 257, 264, 267, 269,  
 372, 387–8  
 NBIC convergence 5, 6, 21, 28, 257  
 negotiations  
 biobanks 143  
 collaboration 175  
 emerging technologies 7  
 Indigenous knowledge 34, 296–8,  
 300–301, 304–5  
 intellectual property 15–16, 232, 235,  
 268  
 international 331–3, 359–60, 362,  
 368, 391  
 open source 143, 201  
 Netherlands 18  
*Netherlands v. European Parliament*  
 (2001) 18

- networks of people and knowledge 3,  
23, 42–3, 58, 125, 135, 174, 198,  
200, 213–14, 222, 226–7, 235, 246,  
255–6, 287, 325–6, 367, 370–71
- neurodegenerative diseases 229
- neuroengineering 17
- neuroethics 16
- neurosciences 18, 229–30, 242, 255
- neurotechnologies 17
- New Biology xiii, 6, 7
- New South Wales 282
- New Zealand 8, 23, 26, 81, 83, 374  
Crown Research Institutes 26
- New Zealand, legislation  
*Patents Bill* 2008 (NZ) 26
- Newfoundland 40
- Ng, Pauline 3
- Nicol, Dianne 31, 133, 139, 141, 149–50,  
156
- Nicotinic acid compositions for treating  
hyperlipidemia* (2010) 110
- Nielsen, Jane 426
- Nippon Electric 269
- Nobel Prize 205, 210, 213, 215, 285, 379
- non-coding DNA ('junk DNA') 23, 106,  
114, 214
- non-practising patentees 188, 196
- Nordic Gene Bank 378, 382
- norms  
industry 101, 329  
moral 20, 238, 250  
scientific 100–101, 112, 143–4, 149,  
158–9, 197–8, 366  
social 7, 149
- 'North' *see* developed countries
- North Carolina State University 244
- Northern Territory 293–301, 306,  
308–10, 314, 318
- Northern Territory Legislation  
*Aboriginal Land Rights Act* 1974  
(NT) 309  
*Biological Resources Act* 2006 (NT)  
295–6, 309–10  
*Land Rights Act* 1976 (NT) 297  
*Territory Parks and Wildlife Act* 2010  
(NT) 310
- Norway 374, 378–9, 381, 383–7  
Ministry of Agriculture and Food  
378, 382  
Ministry of Foreign Affairs 378
- Svalbard Global Seed Vault *see*  
Svalbard Global Seed Vault
- nuclear technologies 255
- Nuffield Council on Bioethics 27,  
245
- nutrigenomics 16
- nutrition 16, 257–8, 308, 320, 324, 331,  
333, 338, 344, 357, 359, 371
- O'Neill, Sean 272
- O'Reilly v. Morse* (1854) 83, 87
- Obama, Barack 14, 176, 237
- oceans 43, 119
- Oguamanam, Chidi 53
- oil 8, 118, 128, 336, 342, 351
- Oliver Brüstle v Greenpeace eV* (2010)  
243, 252, 254
- open access 31–2, 59, 143–5, 148, 151–3,  
156, 158–9, 163, 172–5, 182, 186,  
188, 191, 195–6, 199, 201
- open biotechnology 32, 142, 185–6,  
197–9, 201
- open innovation 259
- open source 2, 31–2, 139, 142–5, 156,  
159, 166, 173, 186, 188, 193, 195–7,  
199, 201, 354, 364, 369
- Opinion of the Enlarged Board of Appeal  
of 12 May 2010* 89
- Orchid Cellmark Inc. 23
- Organisation for Economic  
Cooperation and Development  
(OECD) 53, 66, 81, 133–4, 136–7,  
140, 147, 150, 155–7, 248  
*Biobank Guidelines* 133–4, 136, 138,  
150, 155–7  
*Creation and Governance Report* 133,  
137, 147
- organisms 3, 6, 8, 16, 17, 31, 57, 59,  
73–4, 101, 104, 117–18, 121–5,  
128–30, 133, 160, 177–8, 210–13,  
215–17, 224–5, 231, 235, 237, 283,  
285, 303
- Ostrom, Elinor 144
- Otlowski, Margaret 134, 150
- Outback Earth 308
- Oxford Statement on International Data  
Sharing* 2010 (draft) 134
- ozone layer 279
- P3G 135–6

- The Pacific (region) 42  
 Palsson, Bernhard 127  
 Panama 353  
 Paradise, Jordan 102, 109  
*Parke-Davis & Co. v. H. K. Mulford Co.*, (1911), (1912) 104  
*Parker v. Flook* (1978) 65, 68, 77, 87, 95  
 Parry, Bronwyn 43, 51, 53, 57–8  
 Pasteur, Louis 15, 104–5  
 patent administration 11, 13, 18, 20–22, 33, 50, 80, 89, 100, 103–4, 109, 110, 129, 206–7, 228, 232–3, 247–9, 253, 259, 261, 263–9, 271, 290, 307, 328, 349, 351  
 patent attorneys 120, 236, 253, 263  
 patent clearinghouses 140, 354  
*Patent Cooperation Treaty* 1970 307, 337, 339, 341–2, 345  
 patent crisis 13  
 patent gridlocks 55, 271  
 patent landscapes 189, 264, 271, 273, 275, 288  
 patent law  
   assignment 194, 217, 314, 335  
   bargain 54, 63, 65–6, 82–3, 229, 234, 247–9, 251, 253, 274, 321, 338, 371  
   claims 10–12, 14–15, 20, 24, 26, 51, 63–4, 66–8, 70–72, 75–9, 82, 84–99, 101–10, 112–19, 123, 125, 127–30, 139, 143, 189, 206–8, 215–19, 224, 226, 235, 237, 239–43, 245–7, 249, 272, 286, 307, 335, 342–3, 350–52, 380  
   classification 33, 207, 256, 261–3, 265–9, 334  
   compositions of matter 10, 19, 23, 65, 85, 93, 110, 114, 120, 128, 223, 237, 250, 261–2, 287, 294, 307–8  
   compulsory licensing *see* compulsory licensing  
   correlations 13, 30, 76–7, 92, 94–8, 113  
   disclosure 49, 76, 85, 87, 102, 110–11, 129, 141, 150, 155, 158, 185, 187, 190, 194, 196, 198, 200, 208, 247, 261, 339  
   duration 288, 312  
   enablement 33, 85, 97, 217, 257  
   examination 11, 18–19, 25, 29, 51, 67, 105, 127, 207–8, 215–17, 238, 240, 245–8, 252, 261, 263–6, 268–9, 275, 285–6, 290, 308, 312  
   exceptions 11, 34, 82–3, 98, 110, 114–15, 223, 348, 353, 359–60  
   exclusions 10, 18, 20, 26–7, 30, 69, 80–91, 108–12, 114, 117, 139–40, 228, 233, 235, 240, 244, 251, 261, 274, 286, 348–9, 353, 359  
   exclusive rights 23, 49, 87, 93–4, 102, 109, 111, 140, 170–71, 175, 219, 234, 239, 269, 271–2, 340, 343, 359  
   experimental use (research exemption) 25, 49, 55–6, 140, 188, 259, 272–4, 290, 332  
   fees 9, 144, 151–2, 185, 195–6, 245–6  
   infringement 15, 20, 23, 76–8, 140, 188–90, 270–74, 310, 346  
   invention 8, 10–12, 14, 18–22, 24–7, 30, 33–4, 49–51, 53, 63, 65–6, 69, 71–2, 75, 77–8, 81–91, 93–7, 103–6, 109–10, 113–16, 127–8, 130, 139–41, 187–8, 193–4, 201, 205–8, 215–18, 224, 227, 229, 232–5, 238–40, 243–4, 246–8, 250, 253–4, 260, 263–4, 266–8, 272–4, 277, 286–7, 289–90, 308–9, 311, 334, 336, 338, 342, 349, 355, 359  
   inventive step (non-obviousness) 13, 30, 85, 87–9, 91, 96–7, 99, 109, 113, 120, 197, 207, 233, 247, 266, 307–8, 343, 346  
   joint ownership 312, 314, 319  
   jury trials 271  
   litigation 11, 19, 23, 25, 29–30, 140, 217, 272, 329, 357  
   ‘machine-or-transformation’ test 12, 30, 69–72, 74, 78–80, 83, 90, 94, 108–9, 128  
   manner of manufacture 8, 24, 31, 65, 85, 116, 120, 128–30, 248  
   morality 18–20, 27, 33, 110–11, 233–42, 247–54, 286  
   novelty (anticipation) 18, 49, 51, 69, 85, 87–91, 95–6, 103–5, 110, 196, 207, 209, 212, 246–7, 256, 266, 308, 314, 324, 337, 343

- opposition 59, 102–3, 109, 110, 236,  
 241, 249, 294, 305–6
- ownership 29, 53, 55, 59, 155–6, 192,  
 227, 235–6, 271, 277, 279, 293,  
 303, 314, 319, 321, 347, 350, 365,  
 380–81
- patentable subject matter 8, 10–12,  
 14, 26–7, 29–31, 34, 50, 63–5,  
 70–73, 75–89, 93, 104, 112,  
 114–15, 117, 119, 121, 123, 125,  
 127–9, 139–40, 207, 226, 234–6,  
 248, 253, 260, 285, 334, 346,  
 348–9, 359
- person skilled in the art 206–7
- prior art 30, 51, 87–91, 94–7, 108–9,  
 112–13, 196, 216, 246, 308, 315
- processes 3, 12, 21–2, 24, 26, 27,  
 29–30, 53, 58, 63–4, 68–9, 71,  
 73–5, 80–81, 83, 90, 94, 104, 108,  
 111–12, 121, 125, 189, 205–6,  
 209, 233, 235, 245, 256, 260, 277,  
 284, 337, 345, 351
- products 13, 20, 49, 90, 92–3, 101,  
 104–6, 112, 115–16, 150, 190,  
 195, 199, 208–9, 225–6, 233, 235,  
 239, 257, 260, 265, 273, 277,  
 280–82, 285–6, 289, 303, 306,  
 308, 313–14, 323, 329, 336–7,  
 340–41, 343–5, 346–7, 350–51,  
 369
- re-examination 245–7
- remedies 98, 270, 346
- safe harbor 49
- specifications 125, 207, 215, 218
- standards 64, 84, 91, 113, 116, 233,  
 253
- ‘useful, concrete, and tangible result’  
 67–9, 98
- utility (capable of industrial  
 application) 5, 11, 13, 33, 72, 85,  
 94, 104–5, 110–11, 115–16, 120,  
 129, 207–9, 222–3, 233, 235, 244,  
 247, 346
- validity 9, 14, 18, 20, 24, 58, 63, 70, 72,  
 75–9, 88, 99, 105–10, 127–8, 140,  
 190, 242, 246–8, 270, 273, 286,  
 347
- written description 13, 85, 207–8, 216
- patent offices 11, 13, 18, 20–22, 33, 50,  
 80, 89, 100, 103–4, 109, 110, 129,  
 206–7, 228, 232–3, 247–9, 253,  
 259, 261, 263–9, 271, 290, 307, 328,  
 349, 351
- patent pools 34, 140, 259, 275–6, 290,  
 348, 354, 359
- access to medicines 275
- agriculture 34, 354–5, 359
- biobanks 140
- biotechnology 140, 354–5, 359
- cinematographic films 275
- clean technologies 275, 348, 355
- information technology 275
- medicines 275
- nanotechnology 259, 275–6, 290
- patent quality 263
- patent thickets 33, 55, 189, 200, 215,  
 218–19, 227, 271–2, 275
- patent ‘trolls’ 188, 196
- pathology 9, 10, 23, 30, 63–4, 79, 85,  
 102–3, 105, 107–8, 113–16, 130,  
 208, 214, 260, 346, 350
- peasants 325
- peer review 168, 170, 191–2
- Pernick, Ron 259
- Perry, Mark 14–15
- personal information 134, 136, 145–8,  
 150, 156, 173
- Peru 41, 45, 353
- Pettitt, Clare 49
- pharmaceutical drugs 32, 45, 48, 78,  
 93–7, 136, 159, 173, 209, 219, 258,  
 309, 314
- pharmaceutical industry 9, 10, 29, 48,  
 73, 87, 107, 109, 191, 209, 211, 217,  
 219–20, 270, 309, 313
- pharmaceutical substances 2, 9, 10, 29,  
 39, 40, 48, 49, 52, 54, 58, 73, 80, 87,  
 107, 109, 128, 161, 191, 209, 211,  
 215–17, 219–20, 270, 309, 312
- pharmacogenomics 25, 135
- Pharmakina 46
- phenotypes 145, 161, 173, 210
- philanthropy 44, 375, 377
- Philippines 233, 355, 385
- Intellectual Property Code of the  
 Philippines* 233
- philosophy 29, 117, 122–5, 130, 143,  
 148, 151, 182, 184, 195–6, 201, 207,  
 224–5, 251, 272, 367, 385
- photonic technologies 69

- PIC USA Inc. 23
- Pimbert, Michael 353–4
- Pioneer Hi-Bred International 23, 260, 333, 335–7, 343, 346, 349, 374, 384
- pioneering inventions 163, 265, 327
- piracy *see* biopiracy
- plant breeders' rights 34, 289, 304, 321–30, 332, 334, 347, 353, 355, 358–9, 364, 367, 385, 390
- breeders' exemption 332–3
- distinctiveness, uniformity and stability 324
- duration 325, 329
- exclusive rights 324
- exhaustion 325
- farmers' rights 17, 34, 52, 325–6, 330, 331–2, 346, 347–8, 351–4, 359, 362–3, 384–6
- infringement 325, 329–30
- plant genetic resources 35, 322, 330, 361–5, 367, 373–4, 378, 381–2, 385
- Plant Genetic Systems/Glutamine Synthetase Inhibitors* [1995] 19, 286
- plants 6, 8, 14–15, 19–20, 27–9, 34–5, 39–54, 57–9, 116–20, 125–6, 129, 178, 210–11, 213, 215–16, 286–7, 294–5, 304, 306, 308, 311–15, 320–34, 336–45, 347–65, 367, 373–4, 378, 381–7, 390
- Plomer, Aurora 18, 20, 240, 252, 254
- Pogge, Thomas 2
- policy 2, 8, 13–15, 21–2, 26, 28–9, 32, 51–3, 55–6, 69, 98, 100–104, 108, 117, 129, 136–40, 145, 148, 150–57, 159–60, 163–6, 169, 170–72, 174, 193–4, 206, 208, 228, 230–33, 235, 237, 239, 247, 248, 250–51, 254–5, 257, 267, 287, 290, 293, 294, 302, 305, 314, 316, 317, 322, 329, 342, 353–4, 356, 358, 364, 368, 370, 373, 379, 382–3, 388
- patent 51–3, 248
- public 53, 98, 100, 102, 109, 153, 235, 287, 325, 368
- politics 7, 17, 28–9, 39, 42, 46, 58, 100, 235, 247, 254–6, 269, 279, 281, 287, 374
- pollution 279, 334, 342
- population 2, 41, 71, 133, 136–7, 150–51, 156, 161, 165, 294, 303, 316, 331, 336–7, 341, 343–4, 362, 382, 389
- population genetics 2, 133, 136, 147, 150–51, 156, 161, 165, 366
- population health 71
- Posey, Darrell 305
- Pottage, Alain 8
- poverty 52, 313, 358, 368, 370–71, 373, 375
- Pradeep, T. 258, 278–9, 283
- Pratt, Mary Louise 39–40
- preservation 29, 33, 300–301, 304, 384–5, 387–8
- primates 222, 236–7, 244–6
- privacy 31, 134–5, 137, 143, 145–7, 174
- private sector 1, 2, 9, 15, 23, 31, 54, 59, 73, 100, 135, 137, 139, 148, 150–51, 154–5, 160, 178, 185, 187, 191, 200, 234, 237, 251, 258, 263, 276, 296, 321, 328, 330, 336, 347, 354, 361, 363, 374, 384
- prizes 205, 210, 213, 215, 285, 329
- products of nature 9, 11, 24, 50–51, 90, 94, 103, 106, 129, 207, 232, 260, 285, 350
- Prometheus Laboratories Inc. 12, 30, 78–80, 85, 92–5, 97, 99, 113, 261
- Prometheus Laboratories Inc. v. Mayo Collaborative Services* (2008) 30
- Prometheus Laboratories Inc. v. Mayo Collaborative Services* (2009) 78–80, 94, 108
- Prometheus Laboratories Inc. v. Mayo Collaborative Services* (2010) 12, 30, 85–6, 92–5, 108, 261
- proteins 4, 11, 32, 73, 102, 107, 126, 129, 160, 180, 207–13, 220, 222–3, 338
- proteomics 1, 13, 25, 166
- protocols 34, 58, 172, 181–2, 200, 294, 297, 300, 302–5, 309–10, 315–16, 318–19
- public consultation 151–2
- public domain 12, 49, 55–6, 87, 91, 101, 112–13, 138, 158–9, 163–4, 171, 179, 182, 186–7, 188, 191–3, 196–7, 285, 321, 365, 380
- public funding 2, 163, 190
- public goods 56, 235

- public health 2, 10, 48, 101, 109–10, 136–7, 152, 155, 232–3, 290, 322, 353
- Public Intellectual Property Resource for Agriculture (PIPRA) 357–8
- public interest 139, 141, 233, 274, 329, 358
- The Public Library of Science* 172, 225, 278, 393
- Public Patent Foundation 9, 101, 245–6
- public sector 15, 34, 154, 276–7, 290, 347–8, 355–7, 359
- public sector licensing 15, 34, 276–7, 290, 347–8, 355–7, 359
- public trust 31, 137, 150, 156–7, 287
- Quantum Dots 264, 271
- Queen Victoria 39
- Queensland 295–7, 327–8
- Queensland Legislation  
*Biodiscovery Act* 2004 (Qld) 295–6, 328
- Biotechnology Code of Ethics 295–6
- Qvenild, Marte 364–5
- Radin, Margaret 244
- Rai, Arti 24, 43, 70–72, 116, 189, 205–6
- rainforests 29, 47–50, 379
- Rajan, Kaushik Sunder 57
- recycling 334
- Registry of Standard Biological Parts 32, 179–96, 199–201
- regulation of emerging technologies 18, 21–2, 26, 43, 51, 147, 268, 280–81, 286–7, 289, 290, 294, 309, 330, 336, 358
- regulatory strategies 21, 119, 134, 183, 231–2, 255–6, 268, 281–3, 299, 319, 340
- Reichman, Jerome 56, 159, 171
- Reill, Peter Hanns 40
- Relaxin 19, 129, 286
- renewable energy 320, 337–8
- repatriation 298–9
- research and development (R&D) 25, 73, 83, 100–101, 111, 163, 231–2, 248, 259, 276, 284, 306, 315, 330, 336, 339–40, 343, 346, 355, 357, 359, 367–9, 387
- Research Corp. Techs., Inc. v. Microsoft Corp.* (2010) 85
- Research Foundation for Science, Technology and Ecology 351–2
- research tools 33, 55, 73–4, 80, 82, 133, 141, 156, 206, 210, 225–6, 273, 276, 354–5
- researchers 3, 9, 10, 28–9, 73, 83, 97, 101–2, 127, 133, 136–7, 140, 142, 146–8, 151, 153–4, 156–7, 158–62, 164–7, 169, 171–2, 174–5, 181–4, 187, 189–90, 193–5, 198–9, 211, 257, 268, 278, 295, 313–15, 344, 353–4, 356, 359, 368, 370, 376
- Rettberg, Randy 179, 187–8, 194, 196
- reverse engineering 289
- rice 2, 55, 342–4, 355, 375, 380
- Rice Corporation 264
- Rice Genome Project 2
- Ricketson, Sam 277
- Rimmer, Matthew 2, 8, 19, 27, 49–50, 246, 261, 353, 366
- Rivett v. Monsanto Canada Inc.* (2010) 346
- RNA (ribonucleic acid) 3, 4, 32–3, 73, 115, 122, 126, 205–27
- messenger 122, 126, 209
- micro (miRNAs) 212–13, 215, 218, 221–3, 227
- small 122, 126, 209, 212–13, 215, 218, 221–3, 227
- RNA interference (RNAi) 28, 32, 205–7, 209–21, 224–7
- RNA silencing 205, 209, 212, 214, 221, 222, 225
- Robinson, Daniel 294–5, 308
- Rocco, Fiammetta 41–2, 45–6, 56
- Rockefeller Foundation 355, 367–8, 375
- Rockefeller University 216
- Roco, Mihail 5–6, 256
- Rohm & Haas 267
- Royal Botanic Gardens, Kew 42–6
- Royal Geographical Society 45
- Royal Society of the United Kingdom 55–6, 282–3
- royalties 52, 76, 245, 310, 314, 339
- rubber 40, 44, 47, 54, 89
- Rubber-Tip Pencil Co. v. Howard* (1874) 89
- Rubenstein, Kim 2

- rural areas, communities, and economies 34, 306–7, 327, 356, 368, 370–72
- Ruse, Michael 117–18, 123–4
- Rwanda 46
- Sacker Potatoes Ltd v. C Meijer BV* (2001) 358
- Safrin, Sabrina 53
- Sage Bionetworks 198
- Sage Commons 198
- Sahai, Suman 330
- Sakhalin 52
- Sakraida v. Ag-Pro, Inc.* (1976) 96
- Salamanca-Buentello, Fabio 278
- salinity 259, 323, 326–7, 337, 342, 344, 351, 390
- Sample v. Monsanto* (2003) 359
- Samsung 267
- Samuelson, Pamela 89
- Samuelson Clinic 185
- Sanderson, Jay 326, 329
- Sanhai, Wendy 258
- Sarnoff, Joshua 30–31, 84, 113, 273
- SARS virus 2
- Schama, Simon 378
- Schiebinger, Londa 39, 40, 44, 46, 58
- science 1–391
- science commons 54, 56, 59
- Science* journals 1–2, 4–5, 9, 63, 79, 104, 163–4, 176, 211–14, 227, 229, 271
- scientific collaboration 1, 6, 16, 34, 64, 81, 83, 133, 135–7, 140, 143, 153, 155, 162, 173–5, 191–2, 197–9, 201, 211, 258, 267, 272, 302, 311, 341–3, 347, 358, 368, 373
- scientific community 1, 73–4, 158, 160, 166, 216
- scientific co-operation 16, 313, 348
- scientific discoveries 24, 47, 87, 97, 113, 175, 197, 226, 285
- scientific exploration 29, 39–41, 46, 57, 229–30, 238, 321, 370
- scientific norms 100–101, 112, 143–4, 149, 158–9, 197–8, 366
- scientific progress 21, 49, 54–5, 65, 74, 100, 126, 156, 158, 173, 193, 201, 206, 242, 253, 269, 281, 367–8, 375, 377
- scientific publishing 1, 2, 53, 157–8, 165–6, 167, 169–72, 183, 186, 192, 210–11, 220, 235, 246, 308, 340, 351
- scientific races 2, 359, 366
- scientific research 13, 28, 100–101, 155, 174, 201, 242, 272, 368
- Scotland 31, 138, 152–5
- sea level rises 382, 387
- Seaborg, Glenn 285
- Seabrook, John 361–2, 383
- security 4, 35, 168, 170, 184, 279, 284, 291, 320–23, 326, 330–34, 336, 352, 357–9, 361–2, 365–7, 369–70, 372–6, 379, 381–2, 385–6, 388–91
- seed banks 378, 383–7
- seed wars 363–4, 367
- seeds 29, 35, 39, 41, 43, 45, 46, 48, 51–2, 87, 104, 117, 126, 213, 255, 257, 295, 313, 321–3, 331–2, 336–8, 341–2, 346–7, 351–4, 358–9, 361–7, 374–5, 377–88, 390
- Seiko Instruments 269
- Sell, Susan 321
- Selvamurthy, W. 387
- semi-conductors 125, 262
- Sherman, Brad 8, 19, 286, 322, 332
- Shih, Anna 350
- Shiva, Vandana 51–3, 351–2
- Siberia 40
- Siewert, Rachel 26
- Simons, Malcolm 22
- Single Nucleotide Polymorphisms (SNPs) 161
- Sirna Therapeutics 219
- Slovak Republic 374
- small island states 330, 358
- Smith, Lamar 14, 91, 270
- Smith, Suzanne 352, 357, 376
- sociology 29, 197, 257
- soil 43, 254, 323, 334, 337, 342, 347, 351
- conservation 334
- erosion 323, 333, 347
- salinity 337, 342, 351
- solar energy and power 259, 271, 336, 377
- somatic cell nuclear transfer (also therapeutic cloning) 230
- Sonic Healthcare Limited 23
- Sony 269



- Sorcerer II Expedition 2, 366
- 'South' *see* developing countries; least developed countries
- South Africa 355
- South America (region) 29, 41, 43–5, 53, 183
- South Korea *see* Korea, Republic of
- sovereignty 42, 59, 303, 335, 351, 354
- soybeans 20, 338, 342–3
- The Space Race 366
- Spain 29, 41, 44, 374
- spices 40
- Spruce, Richard 44, 47
- Standard Biological Parts 32, 176, 179–84, 187–8, 193, 200
- standards
- access to genetic resources 303, 378
  - biobanks 133–4, 137–8, 141, 150–53, 155–6, 170
  - moral 250
  - nanotechnology 64, 84, 91, 113, 116, 233, 253
  - open 200
  - scientific 129, 179
  - synthetic biology 179–81, 183, 187, 199, 200
- staple crops 373, 375, 388
- State of Israel – Ministry of Agriculture v. Unilever* (2008) 349
- stem cells 16–22, 26, 28, 32–3, 203, 228–54, 287, 366
- human embryonic 19, 21, 228–9, 333–8, 240–41, 244, 247, 249, 251, 253
  - modified 245
  - multipotent 238, 240
  - pluripotent 237, 243–4, 247
  - primate 236–7, 244–6
  - totipotent 237, 243–4
  - unmodified 244
- Stem Cells/WARF* (2007) 33, 239, 287
- Stern, Nicholas 366–8
- stewardship 29, 42, 336
- Stewart, Timothy 50, 236
- Stoltenberg, Jens 380
- 'storehouse of knowledge' 29, 49, 87, 121
- Stranger, Mark 134–5, 147, 149
- Stuart, Elizabeth 377
- subsidies 353
- sui generis* intellectual property regimes 8, 287–9, 300–301, 305, 319, 322, 326, 328, 330, 349, 359
- Sunrise Medical Laboratories 23
- Supreme Court of Canada 14–15, 31, 128, 346, 349–50, 352
- Supreme Court of the United States 8, 12, 30, 65–6, 68–73, 76–7, 79–80, 82–6, 89–90, 92, 94, 96–8, 103–6, 108, 111–13, 116, 128, 207, 232, 236, 248, 260, 285, 337, 349–50
- surgical methods 80, 81, 110
- sustainability 6, 35, 157, 158–9, 258–9, 278, 294, 301, 303–4, 306, 315–16, 321–3, 327, 336, 341, 343–5, 353, 358, 362–3, 369, 371–2, 379, 382
- Svalbard Global Seed Vault 35, 361, 364–5, 367, 374–5, 377, 378–88
- see also* 'The Doomsday Vault'
- Swanson, Kara 50
- Sweden 28, 54–5, 242–3, 284, 374
- Swiderska, Krystyna 303–4, 353
- Switzerland 303–4, 374
- Sylvester, Douglas 255, 281, 299
- Syngenta Inc. 333, 335, 345, 351, 355, 374, 384
- Synthetic biology 3, 8, 13, 17, 26, 28, 31–2, 118–20, 122, 125–7, 129–30, 176–201, 255
- community 32, 183, 192, 194
  - synthetic drugs 56, 92, 95, 178
- Synthetic Genomics Inc. 178
- systems biology 3, 188, 192, 205, 225
- systems engineering 120
- Tasmania 295
- taxation 91, 101, 113, 245–7
- technology development 32, 195, 335, 348
- Technology Executive Committee 348
- Technology Mechanism 348
- technology neutrality 15, 25, 322
- technology partnerships 27, 147, 178, 258, 277, 311–12, 314, 336, 354, 370–71, 373
- technology transfer 34, 100, 259, 277, 290, 322, 348, 353, 357–8, 363
- Tennessee Eastman Co. v. Commissioner of Patents* [1974] 80

- terminator technologies *see* genetic use  
restriction technologies
- Terrett v. Taylor* (1815) 253
- Thielert, Wolfgang 344
- Third World Network 326
- Thomson, James 229, 236, 238, 244–6
- Tokyo Shibaura Electric 269
- Tol-O-Matic Inc v. Promo Produkt-und Marketing Gesellschaft MbH* (1991) 235
- Toronto Statement* 2009 32, 138, 166–73
- Torrance, Andrew 129–30
- Torremans, Paul 18, 20, 240
- trade law 2, 27, 39, 80, 233, 247, 252, 274, 349, 358
- trade mark law 264–5, 288, 315, 326, 346
- trade secrets (confidential information) 142, 147, 152, 172, 191, 288–9, 313–15
- traditional knowledge 2, 28, 33, 53, 294–6, 300–301, 303–5, 308–15, 317–19, 347, 366
- Traditional Knowledge commons 305
- tragedy of the anticommons 33, 55, 57, 59, 81–3, 227, 259, 271–2, 288
- tragedy of the commons 173
- Transgenic animals/Harvard* [2005] [2006] 19, 238, 286
- transparency 31, 141, 148, 151–2, 157, 280, 289, 384
- transportation 43–4, 264
- Trethowan, Richard 376
- TRIPS Agreement* 1994 2, 27, 39, 80, 233, 247, 252, 274, 349, 358
- Tullis, Terry 272–3
- Turkey 385
- Tuschl, Thomas 33, 205, 211–12, 216–17, 218, 226–7
- UChicago Argonne LLC 270
- Union for the Protection of New Plant Varieties (UPOV) 321, 323–6, 330–33, 347, 353, 359
- United Kingdom 1, 27, 31, 55, 117, 135, 137–8, 147, 151–5, 168–71, 174, 230–31, 242, 271, 282–4, 306, 356, 358, 374
- United Kingdom Biobank 31, 135, 137–8, 151–3, 171
- United Kingdom DNA Banking Network 174–5
- United Kingdom legislation  
*Human Tissue Act* 2004 (UK) 147  
*Patents and Plant Variety Rights (Compulsory Licensing) Regulations* 2002 (UK) 358  
*Plant Varieties Act* 1997 (UK) 358  
*Statute of Monopolies* 1624 (UK) 24
- United Kingdom Medical Research Council 168, 170, 174
- United Nations 35, 174, 248, 278–9, 288, 293, 295, 298, 302, 303, 305, 308, 317–18, 325–6, 347–8, 354, 358–9, 361, 373, 375, 379, 384, 389
- United Nations Covenant on Economic, Social and Cultural Rights* 1966 248
- United Nations Declaration on the Rights of Indigenous Peoples* 2007 293, 298, 302, 317–18
- United Nations Educational Scientific and Cultural Organization (UNESCO) 174–5, 279
- United Nations Environment Programme (UNEP) 297, 302, 305
- United Nations Food and Agriculture Organization (FAO) 35, 362, 364, 378–9, 389
- United Nations Foundation 375
- United Nations Framework Convention on Climate Change* 1992 348
- United Nations Millennium Development Goals* 278
- United Nations University 295, 308, 317
- United States Congress 10–11, 13, 33, 65, 70, 82, 98, 101, 104, 109, 113, 193, 235–6, 253, 270, 273, 359, 377
- United States Court of Appeals for the Federal Circuit 10–12, 30, 63–4, 66–8, 70, 76, 78–9, 84, 290, 350
- United States Department of Agriculture 356
- United States Department of Commerce 21
- United States Department of Defense 284
- United States Department of Energy (DOE) 163–4

- United States Department of Health and Human Services 165
- United States District Courts 9–10, 23, 76, 78–9, 93–4, 103–5, 107–9, 112, 130, 208, 237, 270–71, 350, 359
- United States legislation
- 21st Century Nanotechnology Research and Development Act* 2003 (US) 276
  - Genomic Research and Accessibility Act* 2007 (US) 13
  - Leahy-Smith America Invents Act* 2011 (US) 14, 91, 270
  - Patent Reform Act* of 2007 (US) 270
  - Patent Reform Act* of 2011 (US) 91, 101
  - Plant Patent Act* 1930 (US) 8, 349, 374
  - Plant Variety Protection Act* 1970 (US) 8, 349
  - United States Code* (U.S.C.) Title 35–Patents. 35 U.S.C. 271 75
  - United States Constitution* 65, 82
  - University and Small Business Patent Procedures Act* 1980 (US) (the ‘*Bayh-Dole Act*’) 54–5, 100, 193, 201
- United States Navy 264
- United States Patent and Trademark Office (USPTO) 13, 22, 33, 84–5, 102, 104–6, 114–15, 207–8, 215–16, 218, 223, 226, 235, 237, 246–50, 252–4, 260–65, 267, 290, 350
- green petitions 328
- United States Presidential Commission for the Study of Bioethical Issues 4, 176, 184, 188–90, 192
- universities 9–10, 13–16, 34, 51, 53–6, 58–9, 101–2, 107, 141, 152, 154, 160, 167, 172, 178, 180, 183–5, 190, 193–4, 215–17, 229, 241, 244, 264, 270, 272–4, 276–7, 287, 290, 294–5, 308, 311–14, 317, 319, 327, 358, 378
- University of Bonn 241
- University of California 100, 178, 180, 184–5, 264, 272–4, 368
- University of Chicago 270
- University of Edinburgh 228, 236, 238, 249, 252
- University of Massachusetts 215, 217
- University of Montreal 16
- University of Oxford 160
- University of Utah 101–2
- University of Utah Research Foundation 9, 10, 101–2
- University of Western Australia 277, 357
- University of Western Australia v. Gray* (2008) (2009) (2010) 277
- University of Western Ontario 14
- University of Wisconsin 229
- UPOV Convention* 1991 321, 323–33, 347, 353, 359
- urbanisation 323
- Vaidhyathan, Siva 288
- Van Den Belt, Henk 122
- Van Dooren, Thomas 285–6
- Van Overwalle, Geertrui 63, 79, 111, 141, 250–51
- Van Zimmeren, Esther 141, 250–51
- Vaver, David 87
- Venezuela 41
- Venter, J. Craig 1–3, 9, 176, 178
- Verbeure, Birgit 141
- Victorian Age 61, 65, 74
- Vietnam 355
- Viterra 324
- Von Hippel, Eric 143, 191–2, 199
- Voumard, John 295
- Walsh, John 82
- Walterscheid, Edward 65, 91
- Wardian case 43–4
- Warsaw, Rand 67
- Washburn, Jennifer 54, 59
- waste management 334
- ‘wastelands’ 44, 47
- water 40, 42, 47, 118, 258–9, 278–9, 294, 315–17, 320, 323, 327, 334, 337, 339–40, 342, 344, 350, 353, 357, 376, 382, 389
- filtration 259
  - salination 259
- Water Efficient Maize for Africa 376
- Waterhouse, Doug 34, 327
- weather events 320, 345, 371, 389–90
- Webb, James 46
- Weldon, Dave 13, 235

- Wellcome Trust 135, 154, 162, 164–71  
 Wells, Spencer 2  
 Western Australia 156, 277, 306, 307, 311, 349, 357  
   Department of Environment and Conservation 307  
   Department of Health 156  
 wheat 20, 327, 331, 342, 356–7, 375  
 Wilder, Clint 259  
 William the Conqueror 378  
 Williams-Jones, Bryn 102  
 Willinsky, John 59  
 wind energy 259, 346  
 Winickoff, David 147, 231–2  
 Winter, Gerd 366  
 Wirtén, Eva Hemmungs 29, 39  
 Wisconsin Alumni Research Foundation (WARF) 33, 228–9, 238–9, 247  
*Wisconsin Alumni Research Foundation* (2006) 238–40  
 The World Bank 368, 370, 384  
 World Economic Forum 376  
 World Health Organization (WHO) 2, 56  
 World Intellectual Property Organization (WIPO) 294, 307, 322–3, 339, 341–2, 345  
 World Summit on Food Security 367, 389–91  
 World Trade Organization (WTO) 39, 80, 233, 274, 304, 349  
 Würtenberger, Gert 320–21  
 Wynberg, Rachel 307  
 Xenophon, Nick 26  
 Xerox Corporation 264  
 yeast 104–5, 119, 125  
 Yuille, Martin 135, 174  
 Zamore, Phillip 211–12, 214, 216–17, 227  
 Zovko, Nicholas 273