

INDEX

A

- Activator 34, 44, 55, 56, 269, 357, 366, 450,
464, 465, 467, 468, 473
- Algorithm
- Cheetoh 93–95
 - cisExpress 296–305, 356, 358–361, 364, 367
 - context 168, 169, 188
 - drug scoring 76, 77, 79
 - master regulator search 163, 167–169,
184, 186, 187
 - NetLynx 93, 95
 - network
 - generation 106, 115, 116
 - propagation 93
- PINTA 93–95
- Alternatively splicing 389, 390, 436
- Analysis
- dynamic tree cut 281, 283
 - evolutionary 87, 88, 90, 224, 236
 - functional 101–122, 292, 306, 308,
311, 312, 315, 320, 323, 342, 343, 346, 347
 - gene set (GSA) 126–138, 141,
143–146, 148–150
 - network 71, 88, 90, 103, 110, 114–117,
163, 167, 278, 292, 295, 296, 372–374,
377–379, 431, 440
 - pathway 23, 35, 54, 103, 104, 126,
163, 175, 189, 312, 323, 341, 357, 359,
366–368
 - promoter 171, 182
 - statistical enrichment 94
 - upstream 162, 164, 170, 175, 184,
185, 188, 189
- Autism 86, 371, 374, 380, 381, 386,
389, 391, 394
- Avidity
- function 201, 212–214, 218, 221, 271
 - relative 194–196, 200, 204, 205, 267, 271

B

- Binding
- events 195, 196, 198–201, 203–205,
209, 212–214, 216, 218, 219, 221–227, 234,
236–238, 241, 242, 244, 248–253, 256–258,
260, 262, 263, 265, 267–269, 271–273

- site 32, 93, 166, 176, 179–182, 188,
194, 195, 197–200, 203, 204, 209, 221, 234,
243, 246, 252–254, 256, 258, 262, 266–272,
298, 308, 358
- TF-DNA 195, 196,
198–201, 203, 204, 209, 212, 213, 216, 221,
223–250, 252, 253, 255, 257, 258, 260, 263,
267–269, 271, 272
- Bioinformatics 33, 53–80, 86, 90, 91,
196–198, 200–202, 334, 335, 337,
345, 351, 352
- Biological
- language 23–25
 - network 23–25, 87, 88, 90–92, 95, 96,
104, 105, 225, 371, 372, 403–408, 410–415,
418, 419, 421, 422, 428, 431, 434, 445, 446,
449, 450
- Biology
- systems 21, 22, 28, 194,
426, 438
- Biomarker
- cancer 59, 60, 162
- Biomedicine 48, 79, 292
- Biosynthesis 2, 155, 315, 318, 356

C

- Cancer
- stem cells 463–465, 467–473
- Causal reasoning 105, 111, 118, 122
- Causative mechanism 182, 426–437, 439–445,
447–454, 456
- Cell culture 9, 45, 55, 295
- Classification 66, 67, 88,
129, 162, 194, 315, 341, 415, 480, 481,
484–489, 497–500
- Clustering 66, 67, 113,
120, 250, 258, 268, 271, 279, 281, 283, 295,
296, 299, 300, 341, 345, 375, 378, 426,
427, 431, 446, 456, 484, 485, 489,
491, 492, 495
- Co-expression 93–95, 126–128, 134,
136, 147, 156, 289, 291–303, 305–308, 375,
378, 379, 382–384, 393, 394
- Copy number variants (CNVs) 35, 92, 372,
380–389, 393

Correlation
 SNP-SNP 280, 282

Crowd
 sourcing 22, 23, 25, 27, 28
 verification 23, 24

Cytokine storm 355, 366

D

Data
 integration 104, 349, 351, 393, 395,
 403–408, 410–415, 418, 419, 421, 422
 microarray 47, 126, 127, 131,
 132, 138, 164, 165, 171, 173, 174, 247, 252,
 292, 296, 313, 335–337, 342, 343
 mining 312, 404
 translational 91–95

Database 21, 45, 54, 89, 149,
 162, 184, 194, 292, 313, 338, 358,
 373, 404, 431

Differential
 co-expression 126, 127, 134, 136, 147
 expression 56, 95, 126, 128–133, 142,
 144–146, 148, 149, 155, 164, 165, 347, 349,
 356, 359, 426, 427, 429–431, 433, 434, 436,
 438–440, 445
 variability 54, 126, 127, 129, 134, 135,
 138, 143, 144, 150, 155

Disease
 autism spectrum disorders 371
 biomarker 55, 102, 107, 111, 187,
 292, 372, 378
 common 86
 complex 87, 293, 426–437, 439–445,
 447–454, 456
 intellectual disability 371
 network model 25, 88, 107
 psychiatric 395, 503
 rare 118
 schizophrenia 86, 371, 429,
 479–485, 487–495, 498–503

Disorder
 genetic 86, 405, 447

Distribution
 binomial 127, 137
 gaussian 304, 483
 hypergeometric 111, 113, 120–122, 234,
 236–238, 246, 247, 273
 poisson 138

Drug
 antihypertensive 453
 resistance 164, 187, 463,
 468, 473
 sensitivity to 55, 73, 74
 treatment 55

E

Epigenetic 86, 95, 162, 187, 196, 278, 378,
 394, 453, 468

Error
 Type I 128, 129, 131, 136–139, 141,
 143, 144, 147, 150
 Type II 209

F

Factor
 predictive 93
 transcription 93, 102, 106, 110, 112,
 115, 116, 119, 163, 166, 167, 170, 174, 176,
 177, 180, 182–186, 188, 194–201, 203–205,
 209, 212–214, 216–221, 223–227, 229, 231,
 232, 234, 236–238, 240–253, 255–258,
 262–265, 267–271, 273, 292, 293, 298, 307,
 308, 349, 357, 358, 360–362, 365–368, 426,
 464, 465, 467

Functional
 magnetic resonance imaging 480, 482, 489, 503
 ontology 103, 106–108, 110, 112, 118

G

Gene
 differentially expressed (DEG) 54, 101,
 118, 122, 137, 162, 166, 173, 188, 344, 346,
 347, 349, 351, 356, 357, 359–361, 364,
 366–368, 426, 430, 431, 446, 450
 expression
 differential 119
 tissue-specific 91, 414, 418
 hub 111, 116, 118, 155, 156,
 282, 286, 287, 289, 434, 449
 interaction 95, 106, 278
 prioritization 92–96
 response 356

Genome
 annotation 292
 wide associated study 92, 277–280, 283,
 284, 286, 287, 289, 334, 373

Genomics
 functional 85, 87, 194, 312
 high-throughput 86, 90, 198, 360, 373
 pharmaco- 337, 338
 toxico- 92, 112, 334, 335, 341, 347

H

Heatmap 66, 67, 394

Hypothesis
 competitive 128–130
 self-contained 128–130, 132, 137
 testing 228

I

Information
text mining 88

Integration
semantic 411

Interaction
DNA-protein 198, 199
protein-protein 1, 32, 34, 36, 38, 39, 88,
120, 195, 286, 288, 312, 372, 373, 375, 381,
390, 394, 414–416, 418

K

Knowledge extraction 91–94

M

Machine learning
unsupervised 279

Map 3, 45, 54, 91, 105, 162, 195, 197,
283, 294, 312, 359, 376, 407, 480

Marker
association 60, 111

Master regulator 161–189, 360

Matrix
topological overlap 281, 289

Medicine
translational 414

Melanoma 55, 59, 66–71, 183, 246, 253, 465

Metabolic networks 102, 110

Models
contextual 87–89, 292
explanatory 216, 221, 231, 268, 271
interactome 48, 103–105, 108,
110–114, 120, 203, 212, 359, 374,
376, 379, 390
kinetic 32–34, 36, 44–46, 54
mature 199
multivariate predictive 480
rule-based 32, 34, 44, 312

Mutations
de novo 381

N

Network 377
alignment 88
biological 22–25, 85–96, 104, 105, 225, 372,
403–408, 410–415, 418, 419, 421, 422, 428,
431, 434, 445, 446, 449, 450
brain disease 395
cell type 212, 220, 268, 272, 377, 404, 413
context-specific 90, 91
control 185, 187, 373–377, 389
correlation 71, 134, 277–286, 289

disease 88, 107, 108, 187, 371–382,
393, 413, 450
disruption 479–485, 487–495, 498–503
dynamic 393, 394
functional 479–485, 487–495,
498–503
global 91, 113, 114, 449
language 24
metabolic 102, 110
model 23–25, 27, 28, 36, 39, 41,
44, 88, 91, 106, 107, 214, 220, 268, 271, 428,
445, 449, 450
protein interaction 36, 88, 93, 286, 288, 312,
372–374, 379, 380, 388, 390, 394
psoriatic 358
randomized 374, 375
scale-dependent 220–222, 225, 226, 231
tissue-specific 87, 88, 371–395
toxicity 107
weighted 277–286, 289, 295, 296

O

Ontology 24, 93, 95, 106–108, 111, 112,
118, 122, 162, 283, 286, 320, 323, 337, 345,
346, 357, 359, 368, 380, 404, 406, 407, 411,
413, 415, 421

P

Parameters
kinetic 41–43

Parsers 104, 109

Pathway 32–48, 53, 55, 56, 58, 60, 61, 63, 64, 66
activation
scoring 32–48, 55, 60, 61, 63, 64, 66
canonical map 106–108
metabolic 106, 314, 406, 408, 456
molecular
intracellular 33, 53, 56, 58
prediction 312–314
rewiring 163, 188
signaling 291, 312, 349, 356, 357, 408, 445,
463–465, 467–472
walking 163, 164, 185, 188, 189
wnt 176, 464, 465, 467–473

Phenomics 86, 88

Phenotype
cellular 86, 95, 273
organismal 86

Platform 24, 35, 45, 47, 48, 87, 90, 91,
93, 95, 96, 122, 183, 184, 186, 188, 198, 269,
335–337, 344, 345, 349, 359, 404, 405, 411,
427–430, 433, 436, 455
knowledge-based 122

Prediction 22, 32, 37, 41–43, 58, 67, 88, 90,
 91, 94, 95, 111, 116, 117, 122, 181, 194–196,
 198, 200, 201, 221, 232, 247, 252,
 272, 294, 313, 314, 317, 319, 320,
 322–328, 343, 485, 488

Predictive
 features 294, 482, 485, 501, 502
 models 194, 217, 223, 292, 293, 480,
 482, 487, 495, 502

Process
 GO 106, 108, 112, 122, 162, 174,
 175, 187, 286, 313, 323, 343, 346–349,
 351, 357, 379–381, 415, 430, 431,
 441–444, 449, 453

Promoter
 core 361
 prediction 181, 200, 202
 sequence 167, 295, 296, 305, 306,
 308, 360, 468

Protein
 annotation 6, 102, 311–314, 319,
 322, 323, 328, 335, 341, 343, 375, 380, 381,
 408, 416
 traffic vesicles 428, 440, 453, 456

Proteomics 33, 54, 65, 108, 163, 168,
 169, 188, 334–337, 346, 349, 373, 389,
 395, 428, 436

Psoriasis 369

R

Regulation
 negative 174, 441, 442

Regulatory
 motifs 293, 302, 308, 358, 359, 361, 362

Repressor 34, 55, 56, 365, 366, 450

Response
 predictor 71–79

Risk
 score
 polygenic 277–286, 289

RNA
 messenger 62–65
 micro 55–59, 62–65

S

Screen
 binary 2
 high-throughput 2, 86
 yeast two-hybrid 1–3, 6–8

Self
 contained 128–132, 137, 141
 renewal 463, 466–468, 471, 472

Semantic technologies 404, 405

Sensitivity 7, 32, 33, 44, 55, 59, 60, 64, 67,
 168, 198, 200–202, 204, 205, 209, 212–214,
 217, 218, 221, 229, 248, 249, 251, 255, 257,
 259, 262, 268–273, 282, 283

Sequencing
 bisulfite 102
 chromatin immunoprecipitation 102,
 163–165, 176, 179–181, 188, 197–205, 209,
 212–214, 216–218, 221, 224, 225, 242–260,
 262, 263, 265–273, 359, 368, 369
 DNA 102, 108, 194, 200, 203–205,
 209, 212–214, 216, 220, 226, 247, 250, 252,
 253, 257, 258, 267, 269–271
 next-generation 1–3, 5–7, 9, 10,
 12–20, 34, 45, 47
 RNA 45, 102, 127, 129, 131–133,
 136–138, 164, 168, 173, 188, 292, 369, 379,
 393, 415, 418

Signaling
 alterations 355, 356
 cascades 119, 356, 358, 360, 368
 machinery 291
 mitogenic 32, 36
 network 32, 36, 37, 39, 41, 44,
 168, 188, 366
 wnt 182, 463–465, 467–473

Signaling pathway 366

Signalome 33, 35, 45, 48

Signature 45, 63, 71, 127, 149, 162,
 163, 198, 200, 243, 251, 292, 293, 312, 314,
 315, 319, 352, 380, 427, 431, 436, 438, 439,
 454, 503

Specificity 59, 60, 111, 168, 198, 200, 201,
 204, 205, 209, 212–214, 216, 218, 221, 229,
 248, 249, 251, 252, 255–258, 260, 262, 264,
 267–273, 292, 293, 379, 440

Stem cells
 cancer 463–465, 467–473
 somatic 463

Systems
 biology 21, 22, 24–28, 41, 44, 87,
 102, 110, 111, 194, 312, 337, 426, 438
 self-organizing 87, 216, 223–242
 toxicology 336

T

Target
 drug 87, 105–107, 113, 161, 162,
 164, 167, 174, 185, 187, 188, 372
 mechanism 106

Topology 33, 41, 54, 88, 104, 110, 112,
 113, 170, 278, 281–283, 378, 493, 501

Transcriptional
 regulation 293, 355–369

Transcriptomics 33–35, 47, 54, 60, 102,
122, 164, 167, 170, 173, 188, 216, 223, 279,
368, 372, 384, 386, 395, 436, 454

Trial

clinical 345, 454, 470–473

W

Workflow 96, 105, 110, 118,
119, 164, 166, 167, 170–174, 188, 197, 301,
324, 345, 346, 349, 436