

SUPPLEMENTARY MATERIAL: ANALYSIS OF MULTIPLE DNA MICROARRAY DATASETS

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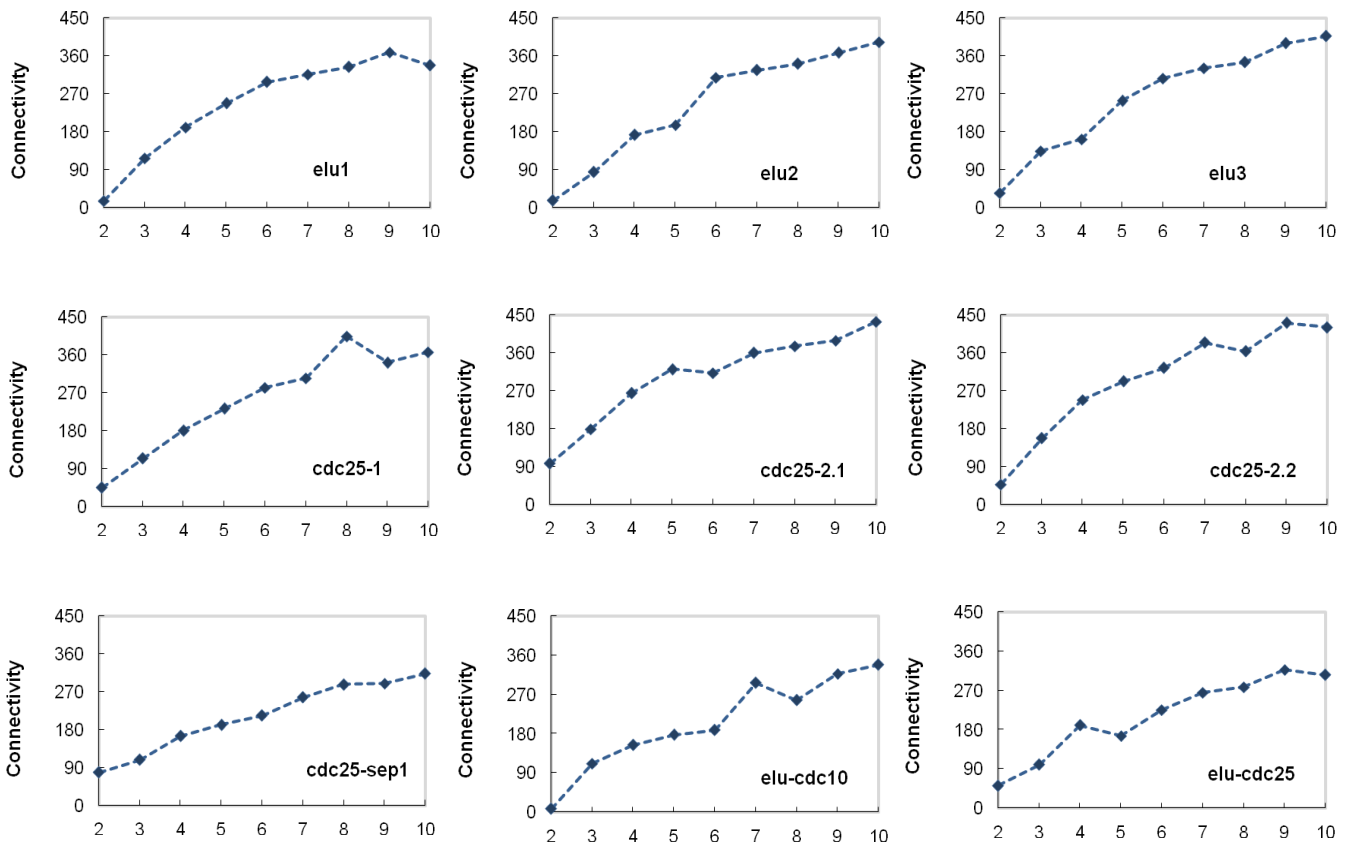


Figure 12.1: *Connectivity* values generated by *k*-medoids clustering method on the benchmark datasets for different number of clusters.

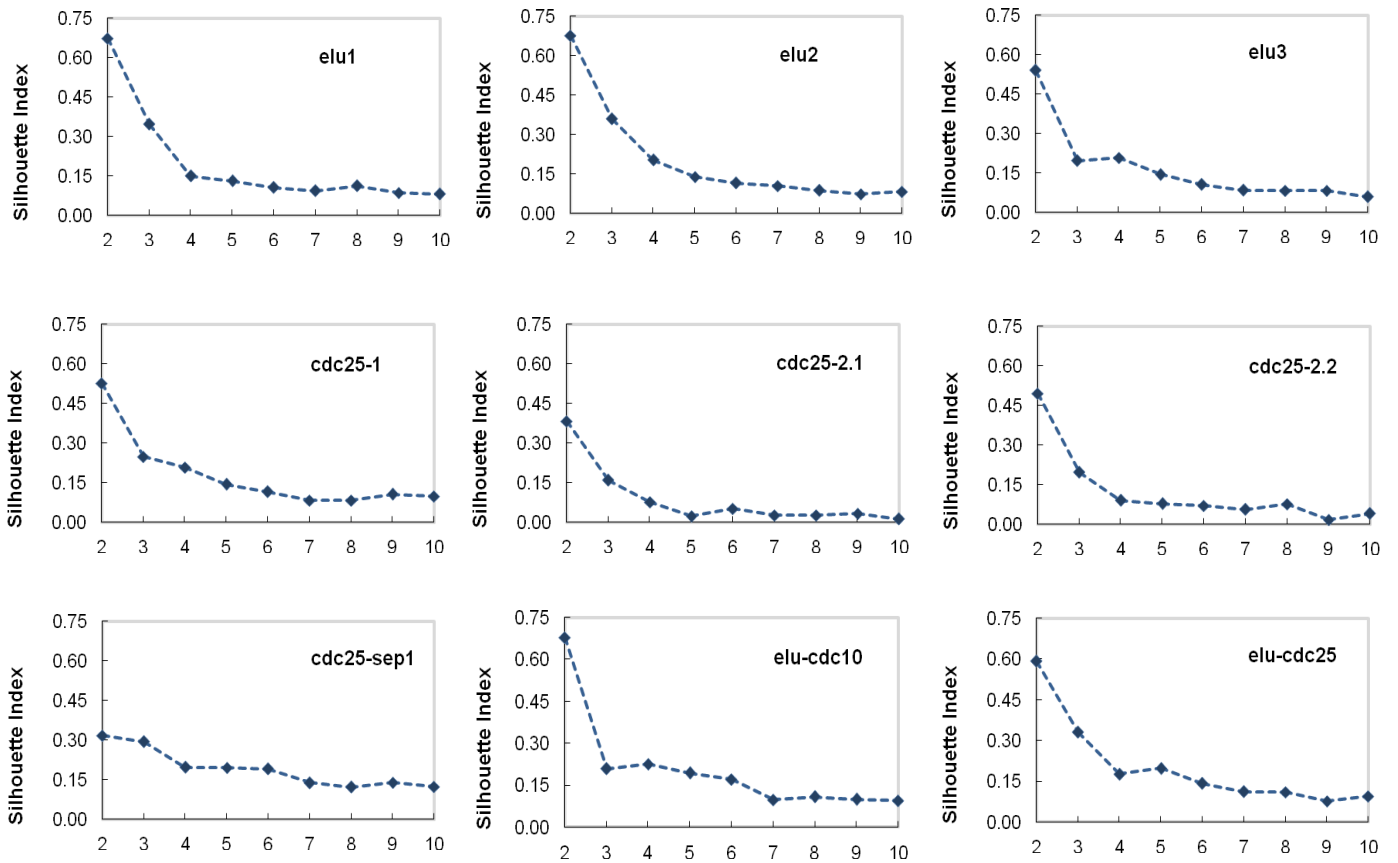


Figure 12.2: *SI* values generated by *k*-medoids clustering method on the benchmark datasets for different number of clusters.

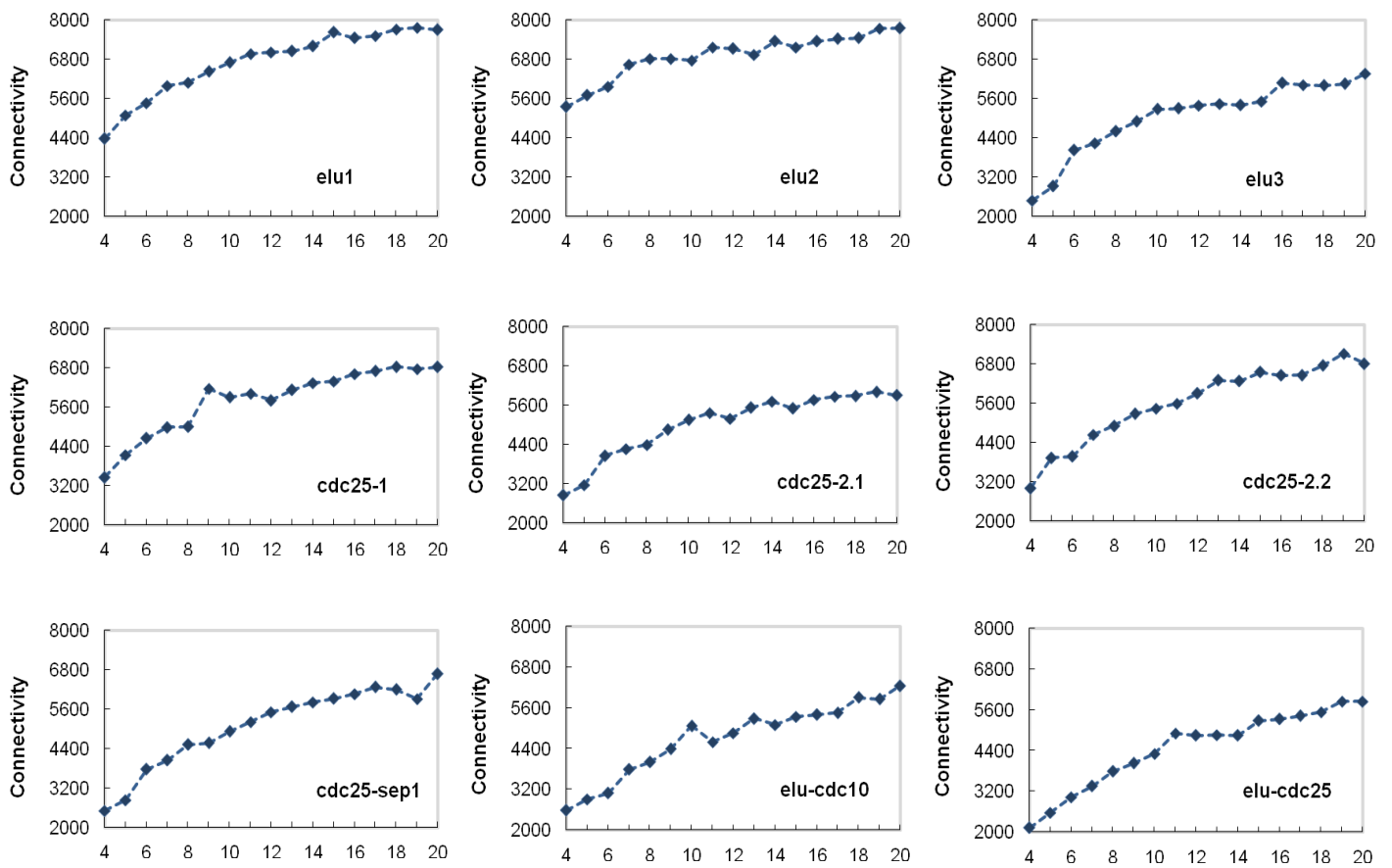


Figure 12.3: *Connectivity* values generated by *k*-medoids clustering method on the real test datasets for different number of clusters.

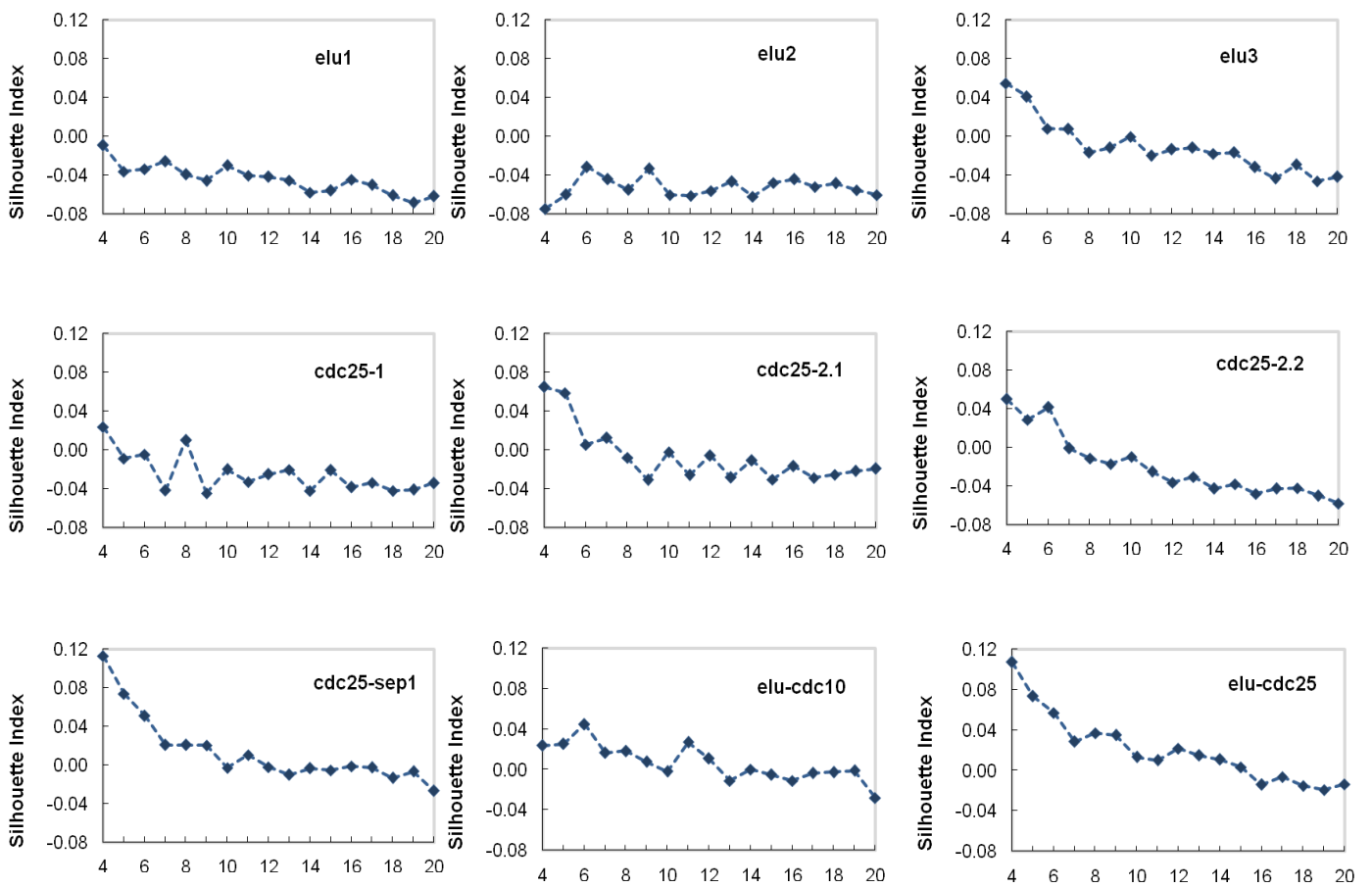


Figure 12.4: *SI* values generated by *k*-medoids clustering method on the real test datasets for different number of clusters.

experiment	el1	el2	el3	cdc25-1	cdc25-2.1	cdc25-2.2	cdc25-sep1	elu-cdc10	elu-cdc25
number of clusters	7	7	8	6	7	6	10	6	7

Table 12.1: The selected optimal number of clusters for the individual real test datasets.

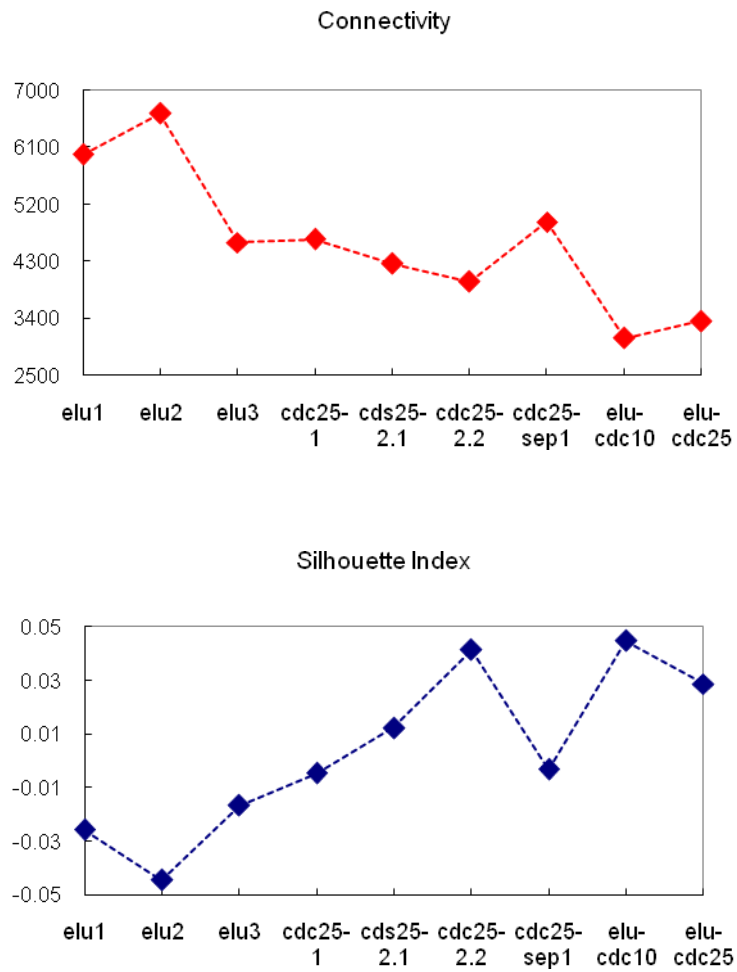


Figure 12.5: *Connectivity* and *SI* values generated by *k*-medoids clustering method on the real test datasets using the selected optimal *k*.

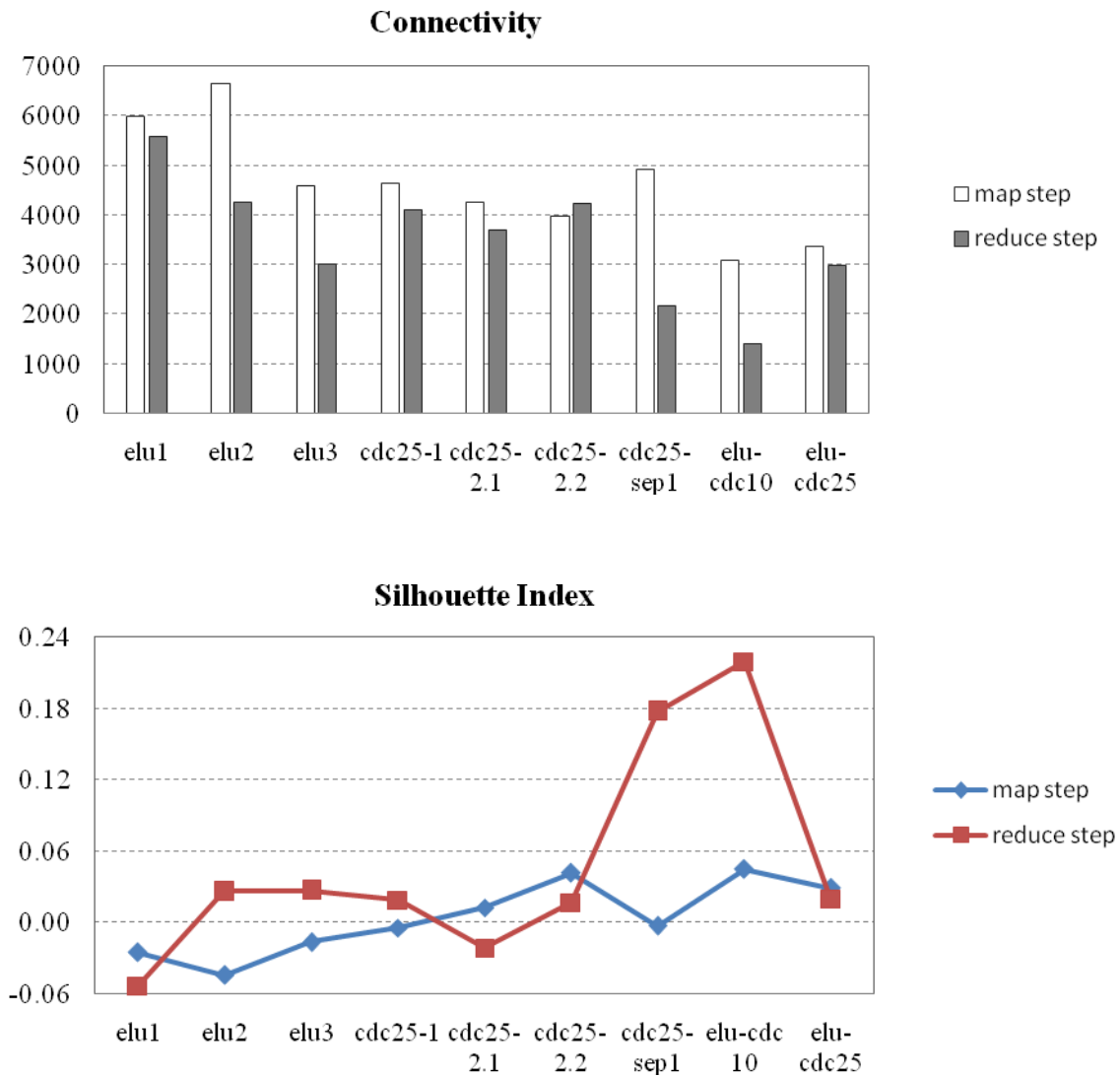


Figure 12.6: *Connectivity* and *SI* values generated by *k*-medoids (map step) and the modified clustering (reduce step) on the real test datasets.

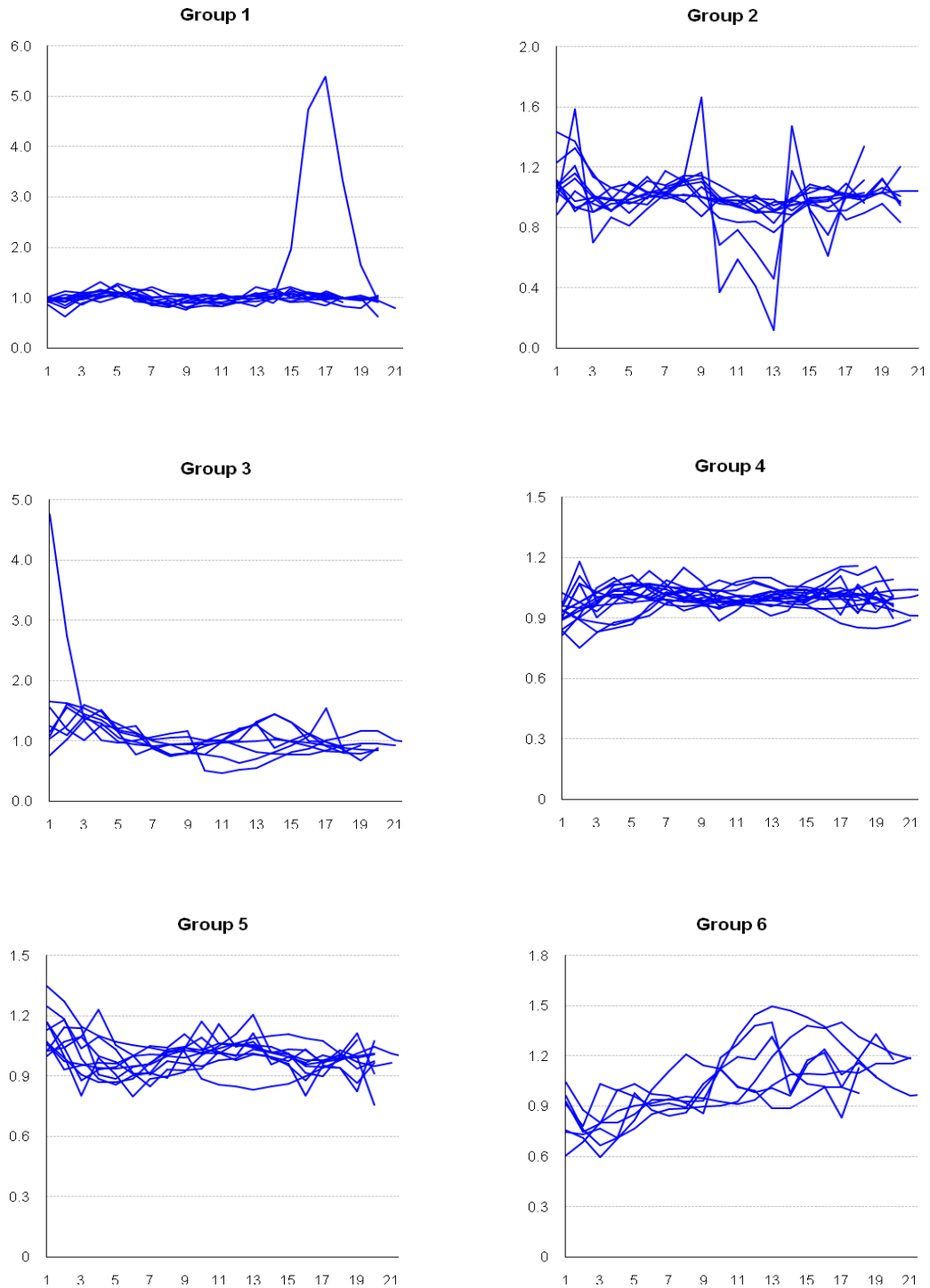
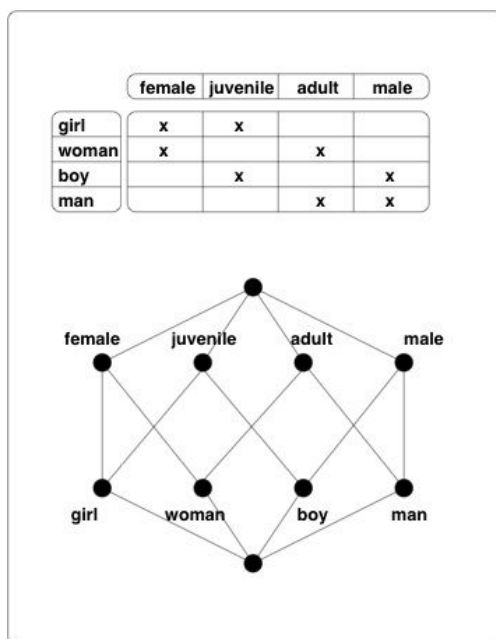


Figure 12.7: The expression profiles of cluster medoids in the final six groups generated across the real test datasets.



LIST OF FORMAL CONCEPTS

- C1 {}; {female, juvenile, adult, male}
- C2 {man}; {adult, male}
- C3 {boy}; {juvenile, male}
- C4 {boy, man}; {male}
- C5 {woman}; {female, adult}
- C6 {woman, man}; {adult}
- C7 {girl}; {female, juvenile}
- C8 {girl, boy}; {juvenile}
- C9 {girl, woman}; {female}
- C10 {girl, woman, boy, man}; {}

Figure 12.8: Left up, a context with $O = \{girl, woman, boy, man\}$ and $A = \{female, juvenile, adult, male\}$. Left down, the built concept lattice¹. Right, the corresponding list of formal concepts.

¹ <http://www.upriss.org.uk>

concept	genes	clusters	number of genes
C1	all genes	∅	386
C2	5, 12, 16, 18, 22, 24, 34, 36, 43, 47, 49, 51, 58, 60, 64, 70, 76, 77, 78, 80, 82, 85, 88, 94, 95, 96, 98, 101, 102, 104, 110, 113, 116, 117, 118, 119, 123, 125, 131, 132, 133, 134, 146, 149, 158, 168, 170, 178, 180, 181, 185, 187, 189, 198, 201, 207, 208, 209, 210, 214, 221, 226, 227, 230, 234, 238, 241, 245, 246, 247, 248, 251, 252, 261, 262, 264, 265, 270, 271, 272, 274, 276, 282, 284, 293, 294, 296, 297, 299, 300, 303, 304, 305, 313, 321, 325, 326, 329, 330, 332, 333, 334, 337, 344, 345, 346, 348, 352, 356, 365, 368, 369, 371, 374, 378	Group 1	115
C3		Group 2	0
C4	218, 347	Group 3	2
C5		Group 4	0
C6		Group 1, Group 2	0
C7	1, 2, 3, 8, 9, 10, 13, 14, 17, 19, 20, 25, 26, 28, 29, 32, 33, 35, 37, 41, 42, 48, 50, 53, 54, 55, 61, 62, 63, 66, 68, 69, 71, 73, 74, 75, 83, 86, 87, 89, 90, 99, 105, 106, 108, 109, 111, 112, 115, 121, 122, 124, 128, 130, 137, 138, 142, 143, 145, 147, 148, 152, 153, 155, 156, 157, 159, 160, 163, 165, 169, 172, 174, 175, 176, 177, 179, 183, 184, 186, 190, 191, 194, 195, 196, 197, 199, 200, 202, 205, 206, 211, 213, 214, 216, 219, 220, 222, 223, 225, 229, 232, 233, 235, 236, 237, 239, 240, 242, 250, 254, 255, 257, 258, 259, 260, 268, 269, 273, 275, 279, 281, 283, 285, 289, 290, 291, 292, 298, 301, 302, 306, 307, 308, 309, 310, 314, 315, 317, 318, 319, 322, 327, 331, 335, 336, 338, 339, 340, 341, 343, 349, 350, 351, 353, 354, 355, 358, 359, 362, 363, 364, 366, 367, 372, 373, 375, 376, 377, 379, 380, 382, 386	Group 1, Group 3	173
C8	31, 91, 215, 224, 267	Group 1, Group 4	5
C9		Group 2, Group 3	0
C10	21, 38	Group 2, Group 4	2
C11	7, 129, 280	Group 3, Group 4	3
C12	23, 100, 135, 144, 161, 228, 266, 328, 357, 384	Group 1, Group 2, Group 3	10
C13	127, 141, 173, 249, 370	Group 1, Group 2, Group 4	5
C14	11, 15, 27, 39, 40, 44, 45, 46, 65, 67, 72, 81, 97, 154, 182, 192, 193, 217, 253, 277, 278, 287, 312, 342, 360, 361, 381, 383	Group 1, Group 3, Group 4	28
C15	4, 52, 56, 57, 79, 84, 92, 93, 103, 107, 114, 126, 140, 150, 164, 166, 167, 171, 188, 203, 212, 231, 243, 244, 263, 288, 295, 311, 320, 323, 385	Group 2, Group 3, Group 4	31
C16	6, 30, 59, 120, 139, 151, 162, 204, 256, 286, 316, 324	Group 1, Group 2, Group 3, Group 4	12

Table 12.2: The list of concepts generated on the benchmark datasets.