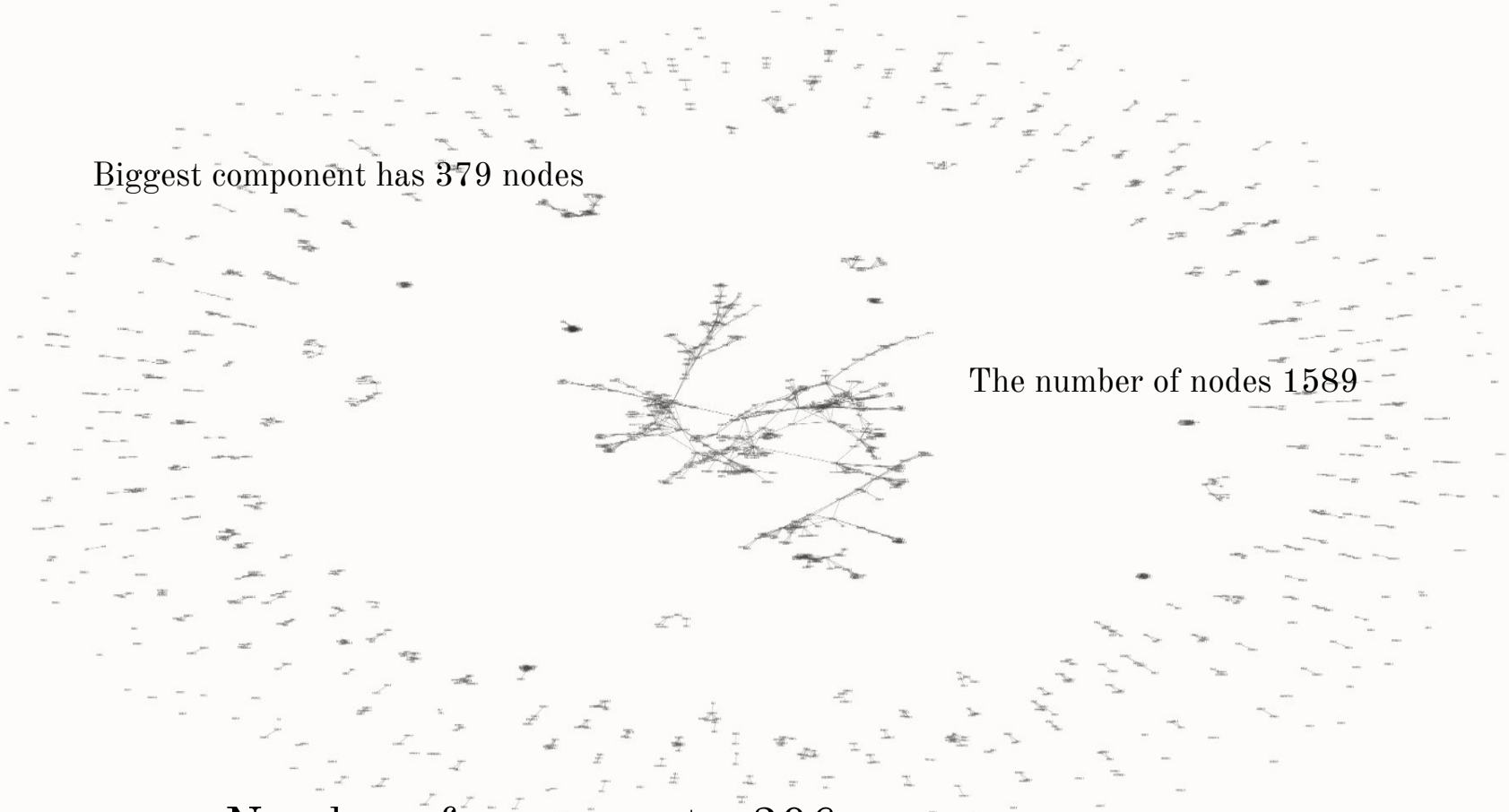
Co Authorship Network Study

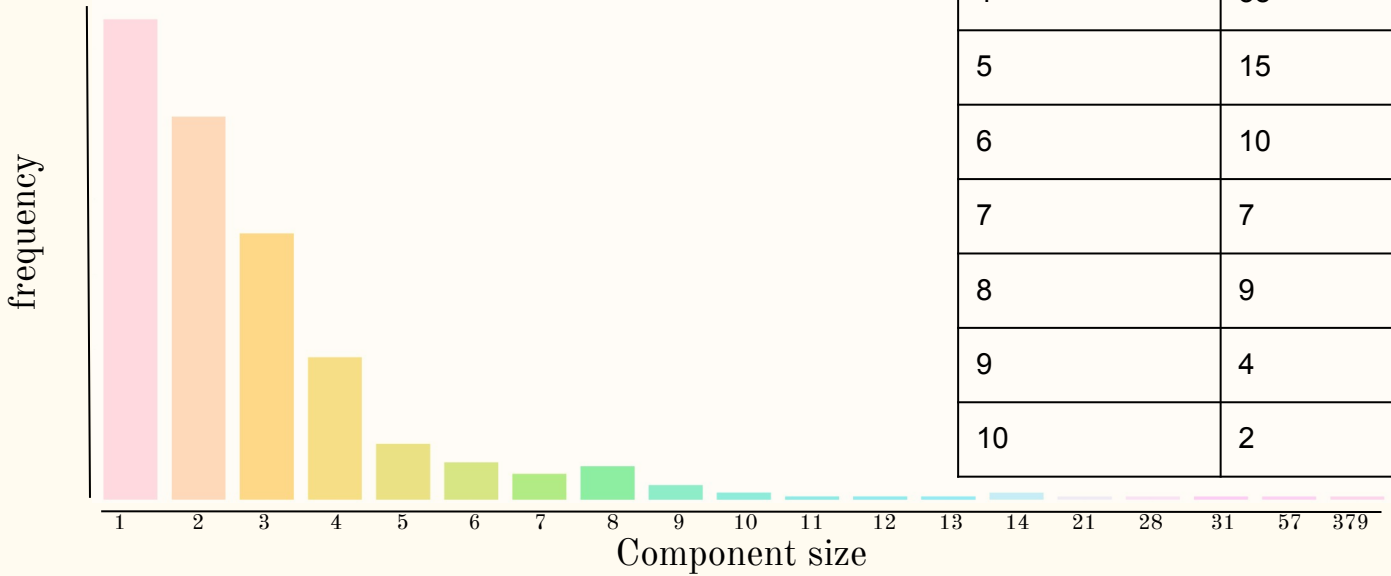
By Mostafa Eid



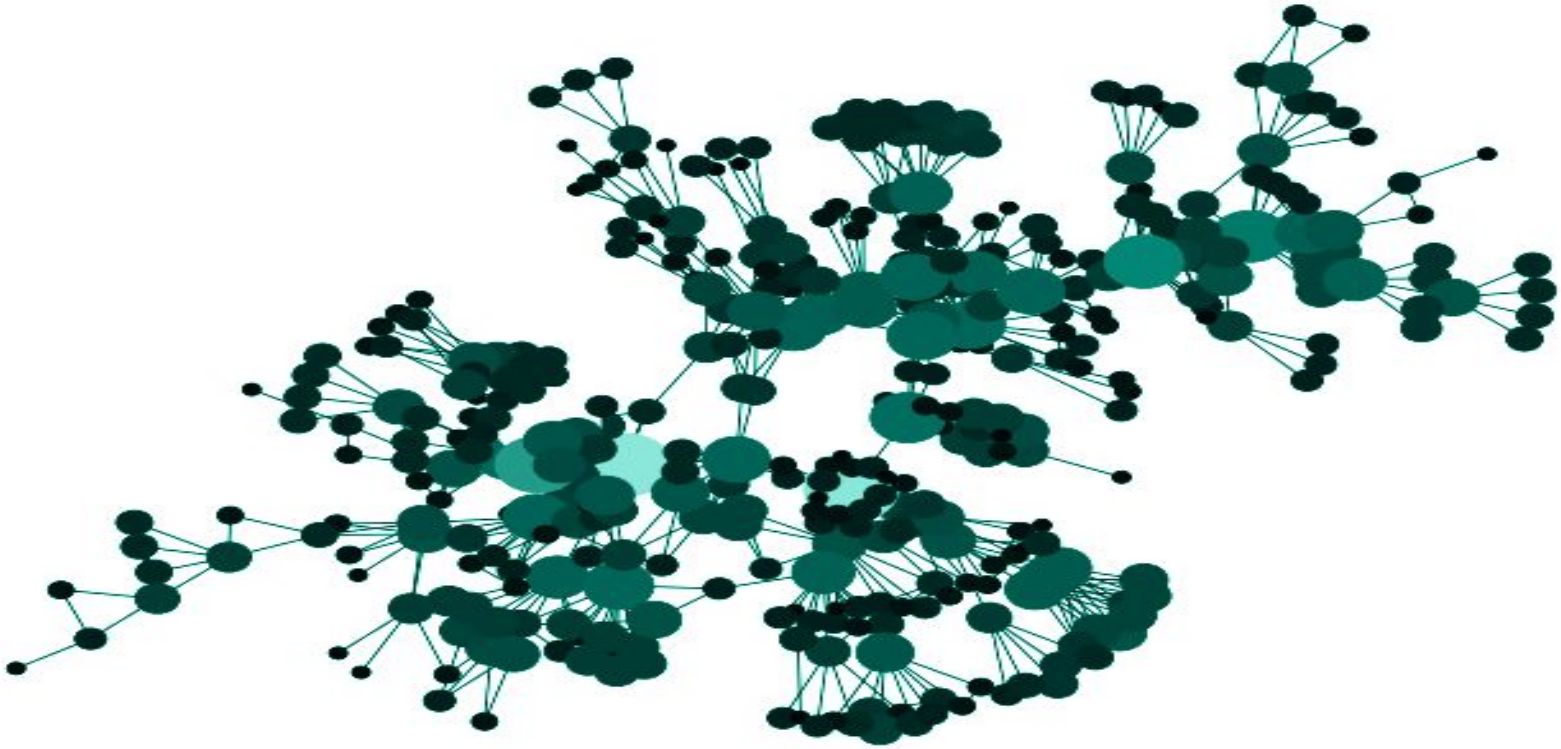
Number of components: 396

Interesting facts

Connected component size	frequency	Percentage %
1	128	32.32
2	102	25.75
3	71	17.92
4	38	9.59
5	15	3.78
6	10	2.52
7	7	1.76
8	9	2.27
9	4	1.01
10	2	0.50



Largest Connected Component



Who is the most important or central person in this network?

Centralities of the network

Degree Centrality

This is the simplest centrality as it depends on the degree of the node.

In the Graph we are studying it represents the number of scientists one worked with on a paper.

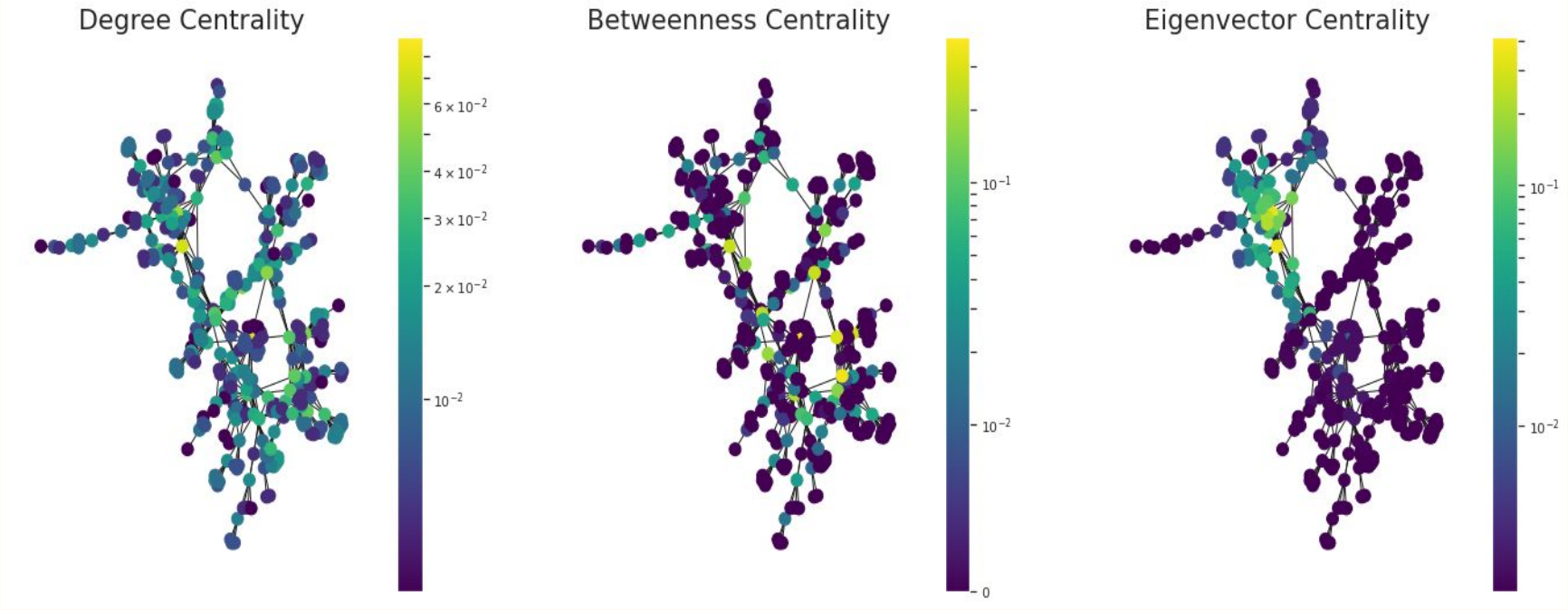
Betweenness Centrality

Betweenness centrality measures are used to find nodes that appear in many paths between nodes.
What we will have is the scientists who worked with different groups of other scientists

Eigenvalue Centrality

Or what is called prestige centrality where the nodes have high eigenvalue centrality when they are connected with important nodes.

Centralities of the network



Centralities of the network

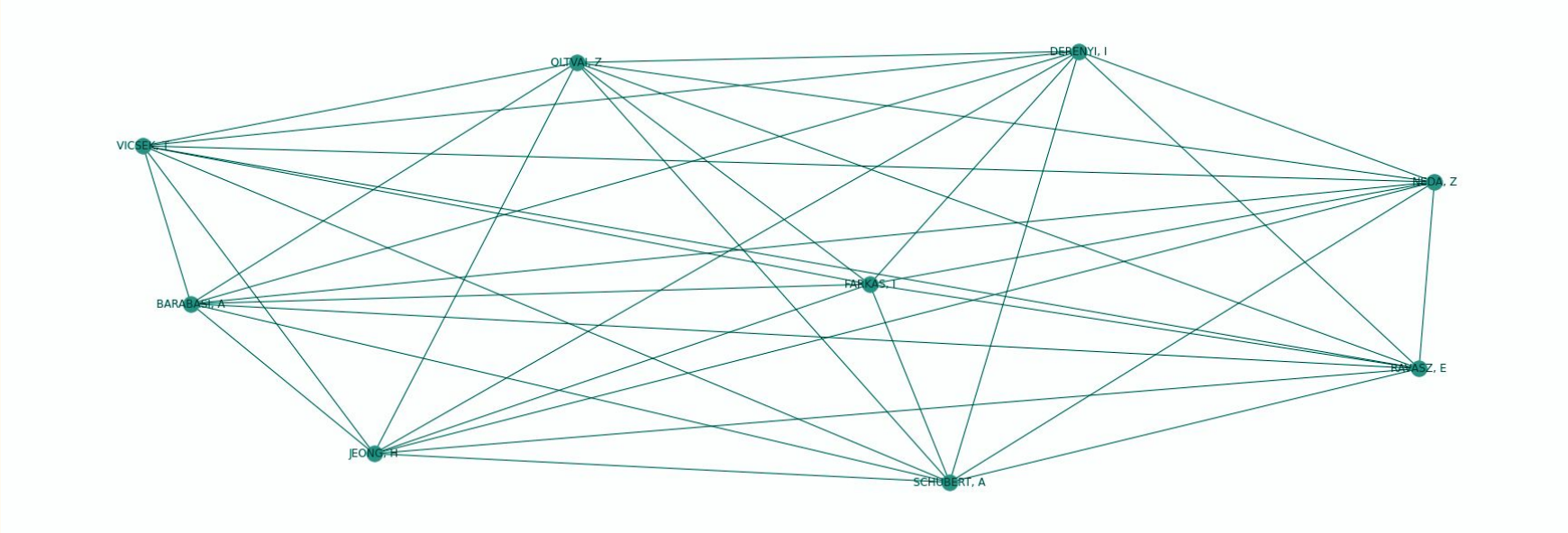
scientist	Degree centrality value
Barabasi. A	0.089
Newman. M	0.071
Jeong. H	0.071
Oltvai. Z	0.055

scientist	Betweenness centrality value
Newman. M	0.39
Pastorsatorras. R	0.34
Moreno. Y	0.28
Sole. R	0.27

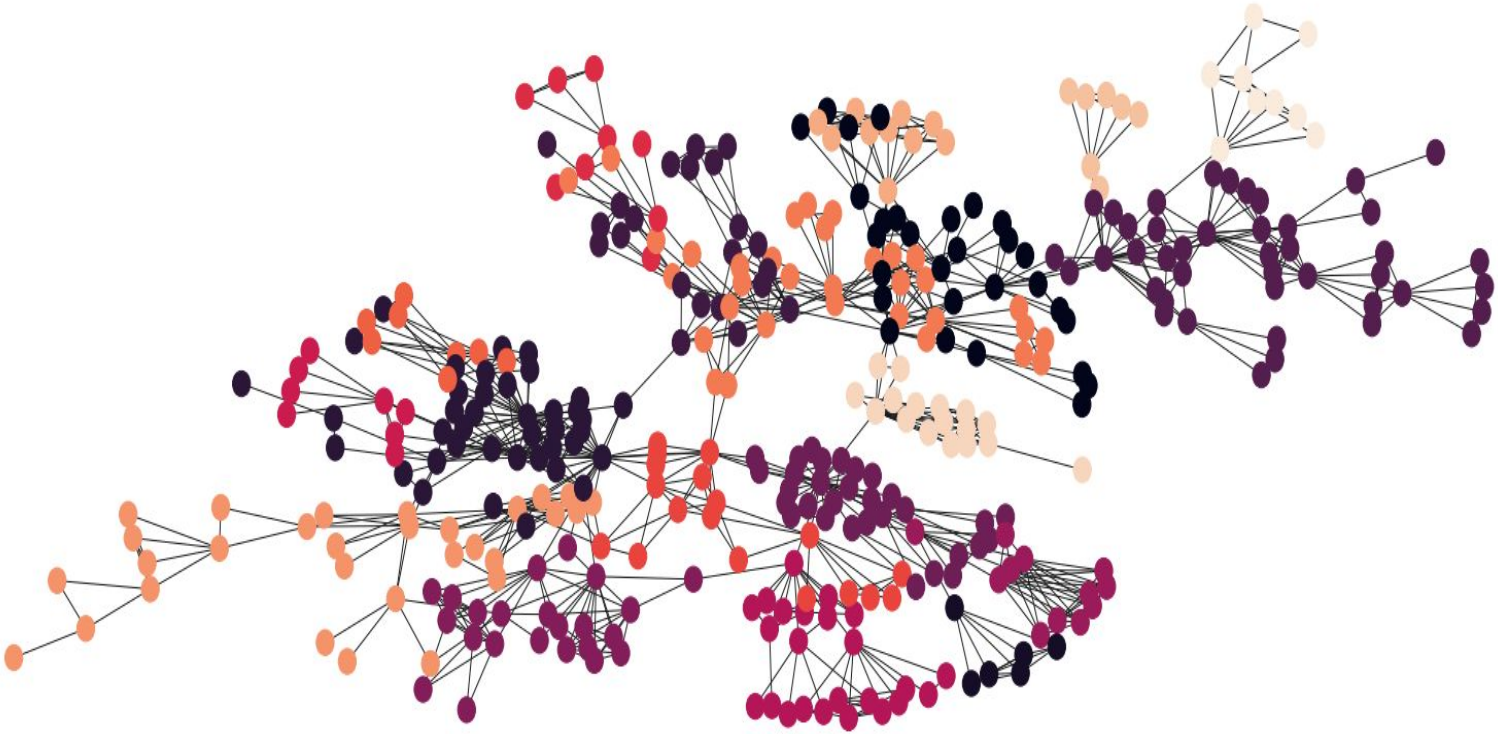
scientist	Eigenvalue centrality
Barabasi. A	0.41
Jeong. H	0.35
Oltvai. Z	0.34
Vicsek. T	0.25

Interesting Facts

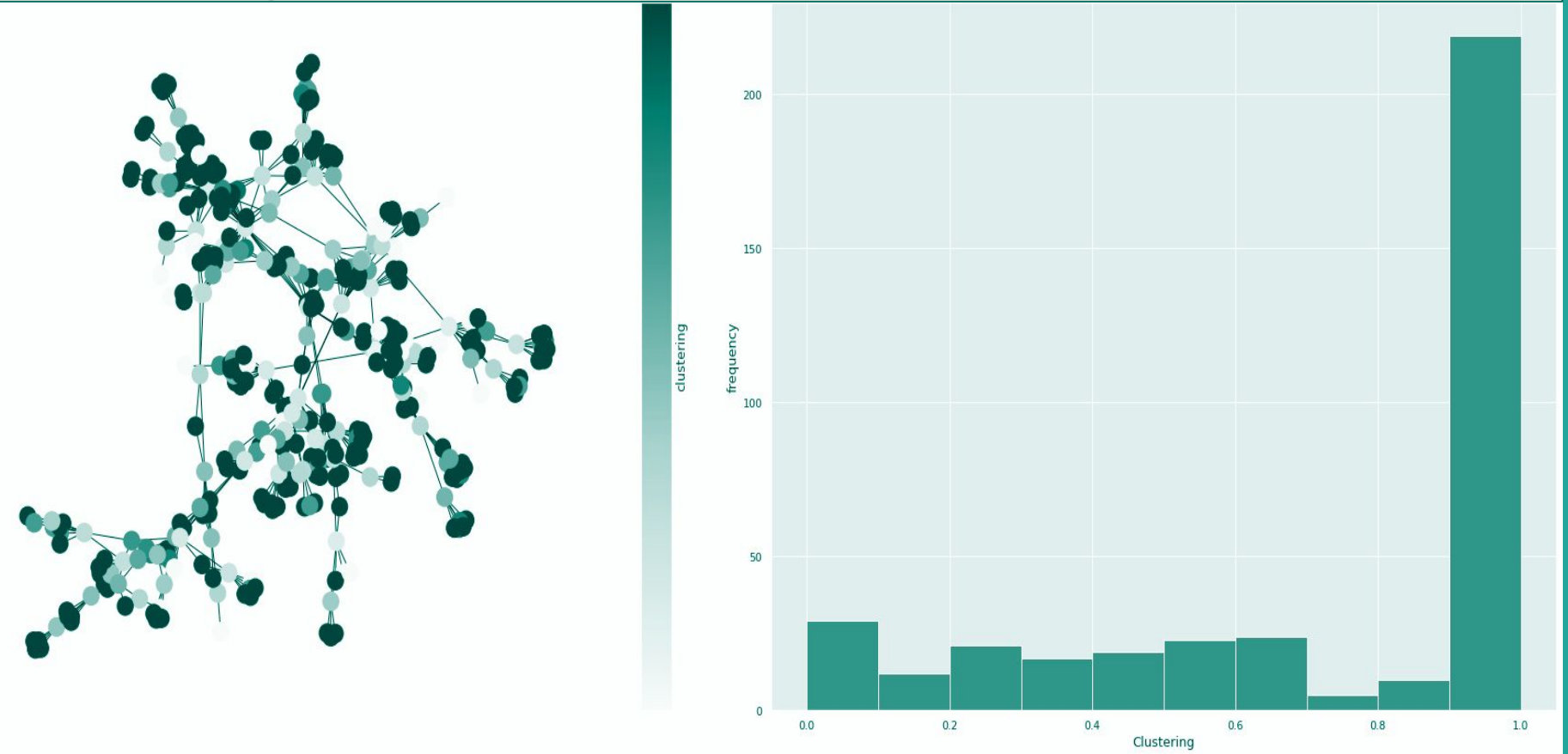
Average clique size: 3.5
Number of cliques: 203
Biggest clique size: 9

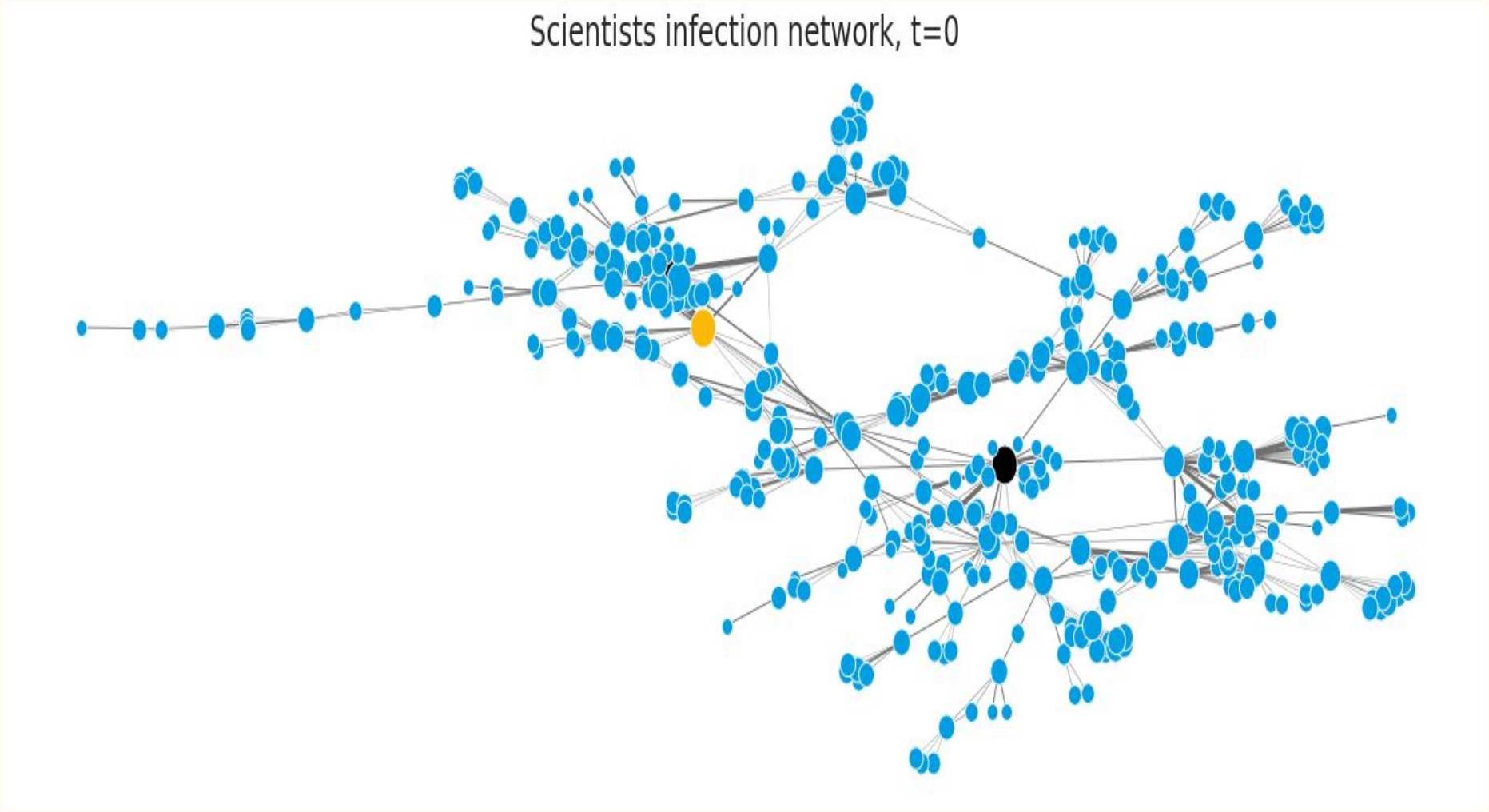


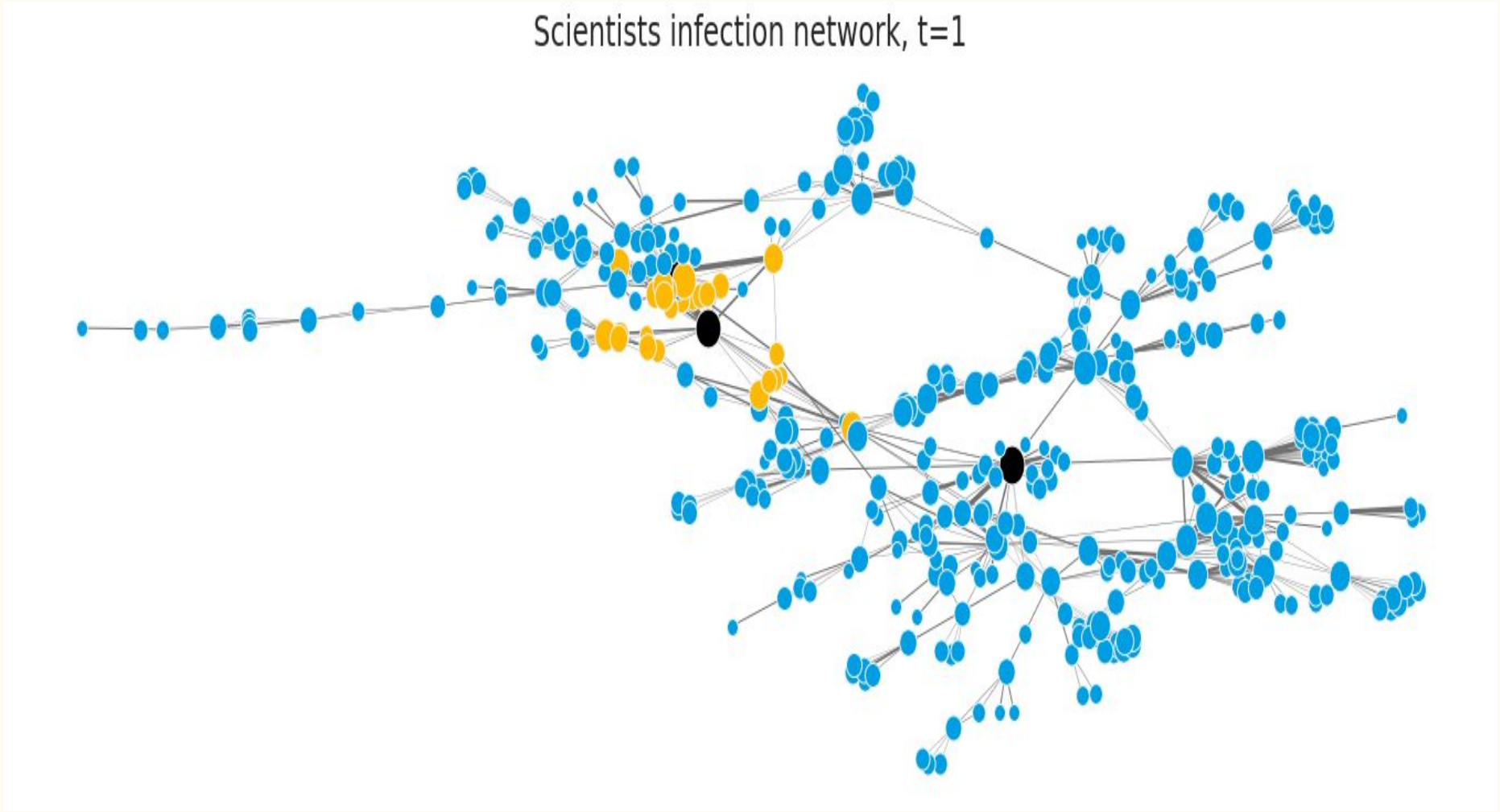
Louvain Community Detection

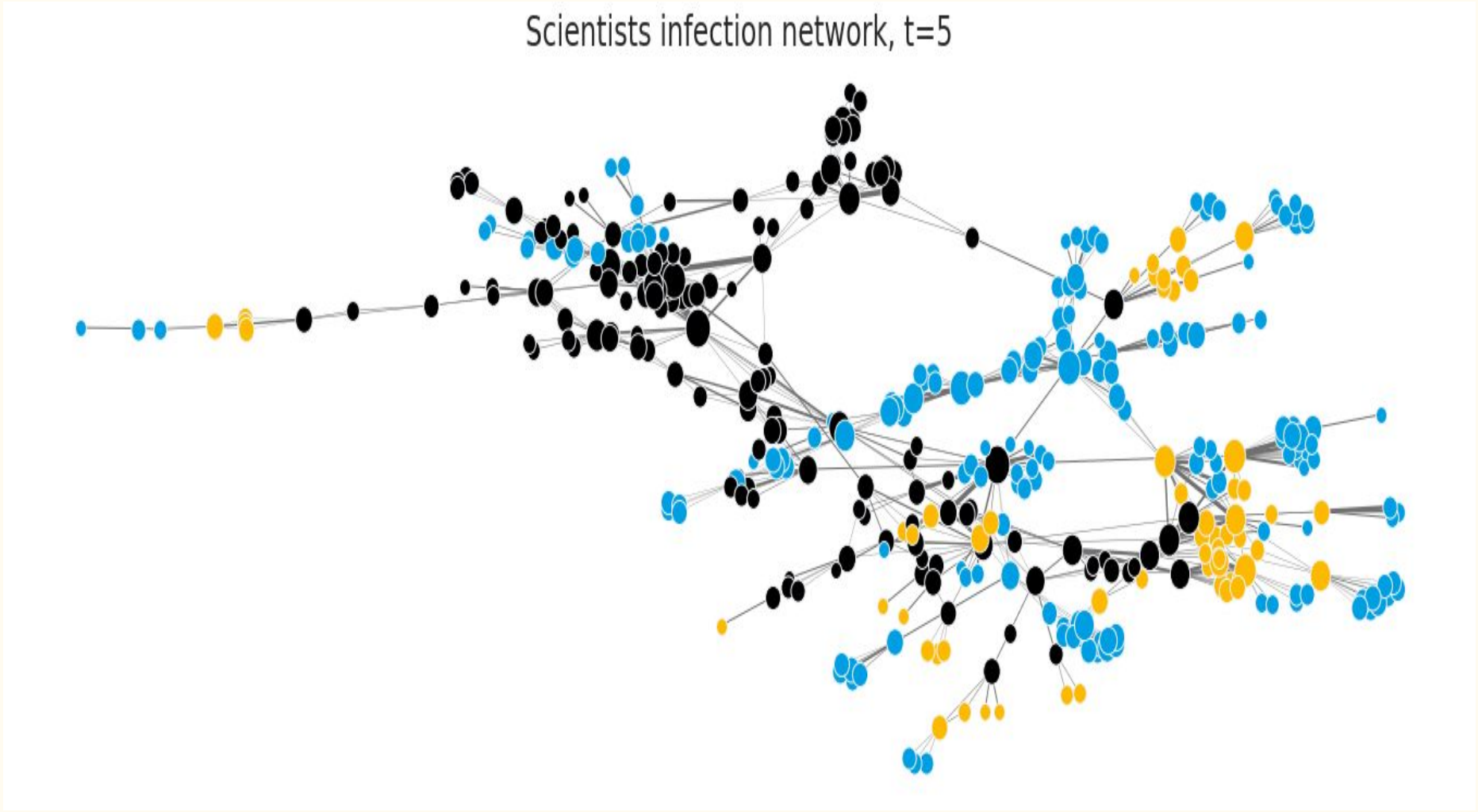


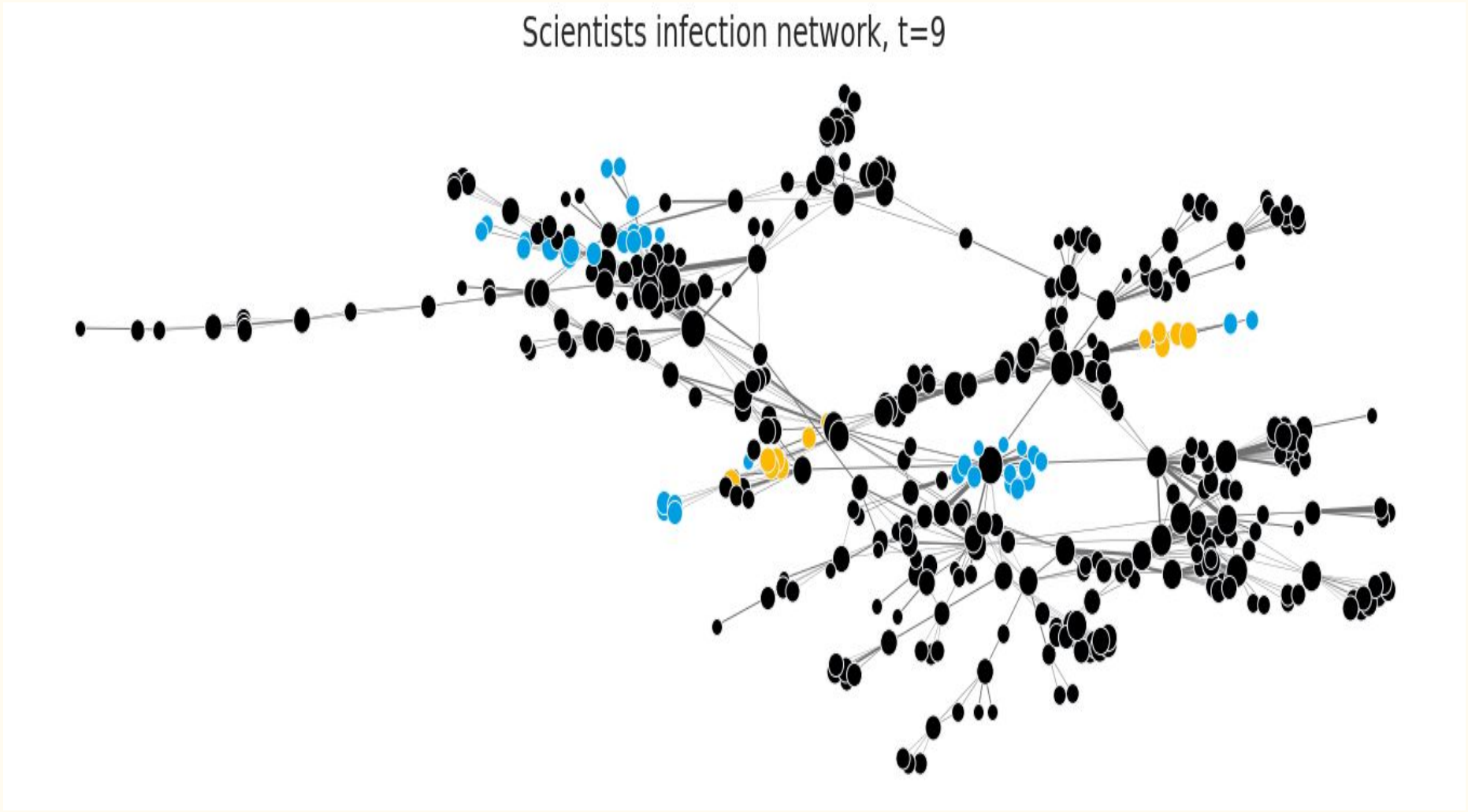
Clustering Coefficient




Scientists infection network, t=0


Scientists infection network, t=1


Scientists infection network, t=5


Scientists infection network, t=9

Community Centrality